NAD

SERVICE MANUAL

7220PE
7020e

AM/FM RECEIVERS

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-7220PE / 7020e

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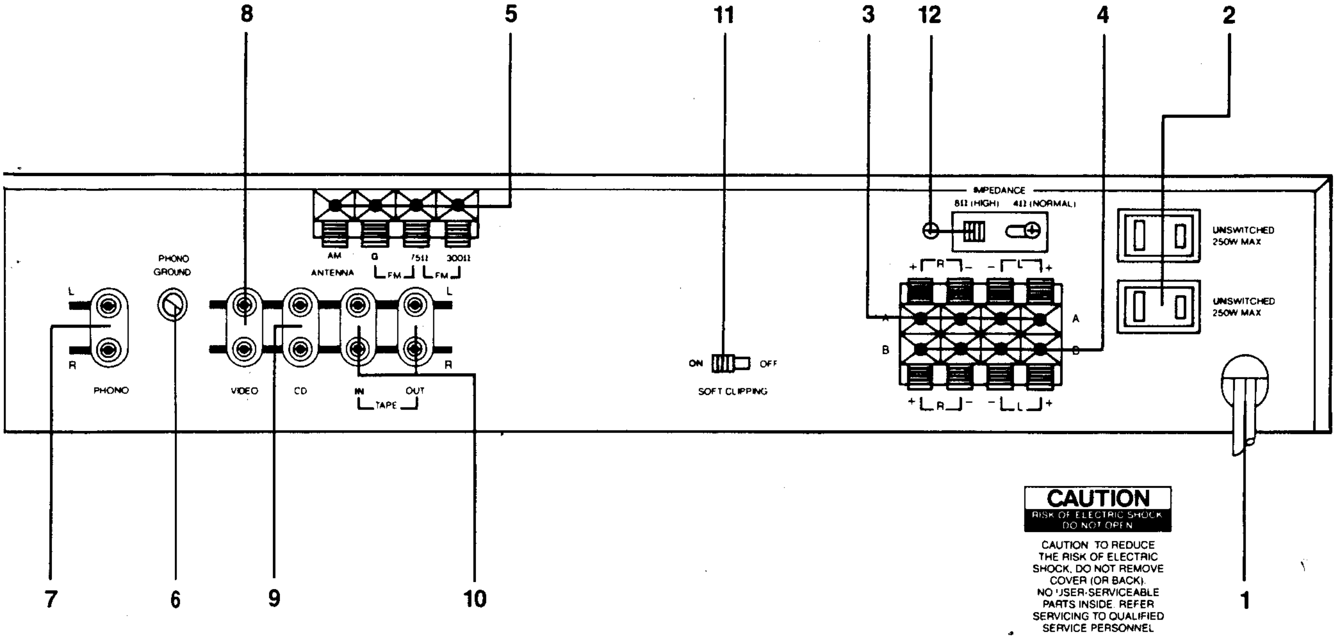
EAR PANEL

AC Line Cord.
AC Outlets.
Speakers A.
Speakers B.
Antenna Terminals.
Phono Ground.

7. Phono Input.
8. Video Sound Input.
9. CD Input.
10. Tape Input/Output.
11. Soft Clipping.
12. Speaker Impedance.



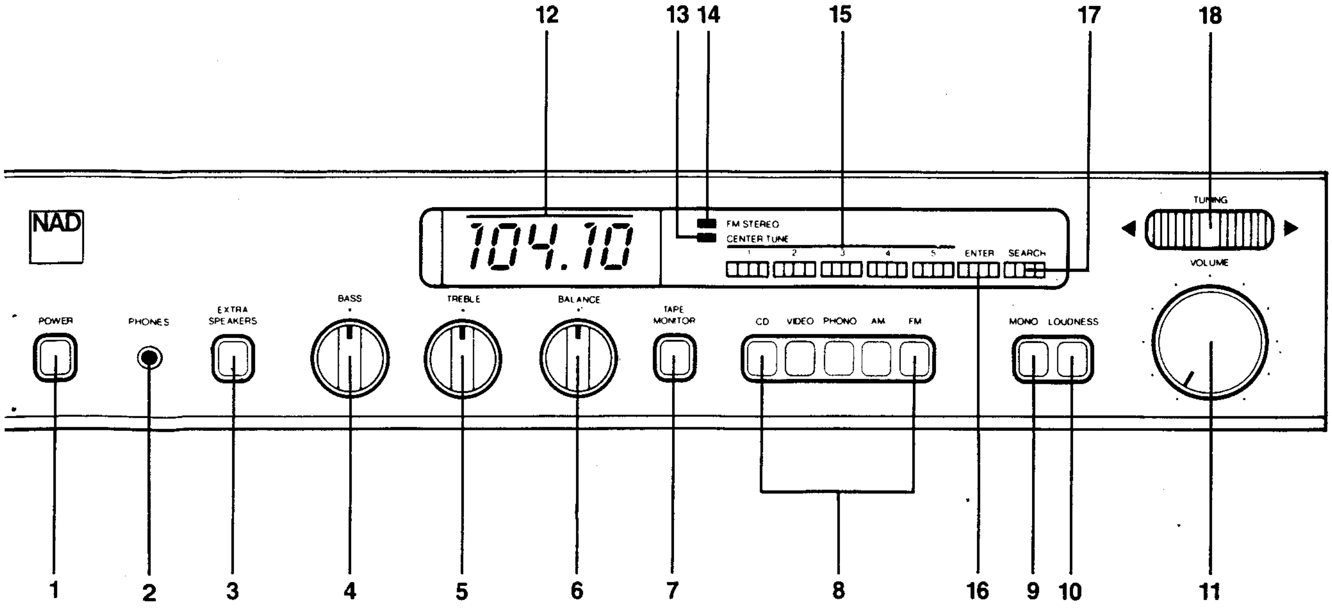
8
5
11
3
12
4
2
IMPEDANCE
8Ω (HIGH)
4Ω (NORMAL)
UNSWITCHED 250W MAX
UNSWITCHED 250W MAX
AM
G
75Ω
300Ω
ANTENNA
FM
FM
PHONO GROUND
L
R
PHONO
VIDEO
CD
IN
OUT
TAPE
ON
OFF
SOFT CLIPPING
A
B
R
L
CAUTION
RISK OF ELECTRIC SHOCK DO NOT OPEN
CAUTION: TO REDUCE THE RISK OF ELECTRIC SHOCK, DO NOT REMOVE COVER (OR BACK). NO USER-SERVICEABLE PARTS INSIDE. REFER SERVICING TO QUALIFIED SERVICE PERSONNEL.
7
6
9
10
1

RONT PANEL

Power.
Phones.
Extra Speakers.
Bass.
Treble.
Balance.

7. Tape Monitor.
8. Input Selector.
9. Mono.
10. Loudness
11. Volume.
12. Tuning Display.

13. Center-tune Indicator.
14. FM Stereo Indicator.
15. Tuning Pre-sets.
16. Memory Enter.
17. Search Mode.
18. Up/Down Tuning.



12
13
14
15
17
18
NAD
104.10
FM STEREO
CENTER TUNE
1
2
3
4
5
ENTER
SEARCH
TUNING
VOLUME
POWER
PHONES
EXTRA SPEAKERS
BASS
TREBLE
BALANCE
TAPE MONITOR
CD
VIDEO
PHONO
AM
FM
MONO
LOUDNESS
1
2
3
4
5
6
7
8
16
9
10
11

Specifications
NAD 7220PE Stereo Receiver

Note: Specifications are measured in accordance with EIA Standard RS-490 (IHF A-202) for amplifiers and ANSI-IEEE Standard 185 (1975), i.e. IHF T-200, for tuners. Amplifier measurements referred to 8 ohms are taken with the Speaker Impedance selector set to 8Ω (High). Measurements for 4 and 2 ohms are taken with Impedance selector at 4Ω (Normal).

Power Amplifier Section

CONTINUOUS AVERAGE POWER OUTPUT		
AT 8 OHMS (minimum RMS power per channel, both channels driven, with no more than the rated distortion)		**20 W (13 dBW)**
Rated distortion (THD), 20 Hz - 20 kHz		0.04%
Clipping power, 1 kHz (maximum continuous power per channel)		25 W
Dynamic Headroom at 8 ohms		+4.4 dB
Dynamic power (maximum short-term power per channel)	**8 ohms**	55 W
	4 ohms	75 W
	2 ohms	85 W
Slew factor		> 50
Slew rate		15V/µsec
Damping factor (ref. 8 ohms, at 50 Hz)		> 30
T.H.D and SMPTE I.M. distortion from 250 mW to rated output		< 0.04%
IHF I.M. (CCIF IM) and T.I.M. distortion at rated output		< 0.04%

Preamplifier Section

Phono Input

Input Impedance	R = 47KΩ , C = 100 pF
Input Sensitivity (1 kHz)	0.55 mV for 1 W out 2.4 mV for 20 W out
Signal-to-Noise Ratio with cartridge connected, A-weighted	75 dB re 5 mV
Input Overload at 20 Hz/1kHz/20kHz	20/200/1700 mV
RIAA Accuracy	±0.5 dB

High-Level Inputs (CD, Video, Tape)

Input Impedance	R = 40 kΩ , C = 100 pF
Input Sensitivity	33 mV for 1W out 150 mV for 20W out
Signal-to-Noise ratio, A-weighted	84 dB re 1 W out 97 dB re 20W out
Input Overload	>10 V
Frequency Response	20Hz - 20kHz +0.5, -1.0 dB
Infrasonic Filter	-3 dB at 15 Hz 24 dB/octave

Controls

Treble	±7 dB at 10kHz
Bass	±10 dB at 50 Hz

FM Tuner Section

Input sensitivity		
	Mono, -30 dB THD+N	10.8 dBf (1.9 µV/300Ω , or 0.95 µV into 75Ω)
	Mono, 50 dB S/N	14.4 dBf (2.9 µV/300Ω)
	Stereo, 50 dB S/N	37 dBf (40 µV)
	Stereo 60 dB S/N	47 dBf (120 µV)
Capture ratio (at 45 and 65 dBf)		< 1.5 dB
AM rejection (at 65 and 85 dBf)		> 60 dB
Selectivity		58 dB
Image rejection		70 dB
R.F. intermodulation		60 dB
I.F. rejection		90 dB
SCA rejection		60 dB
Subcarrier suppression (19 & 38 kHz)		60 dB
THD at 100% modulation	**Mono, 1 kHz**	0.1%
	100Hz-6kHz	0.2%
	Stereo, 1 kHz	0.1%
	100Hz-6kHz	0.3%
Signal-to-noise ratio IHF weighted, 65 dBf	**Mono**	> 80 dB
	Stereo	> 74 dB
Frequency response, 30Hz-15 kHz		±0.5 dB
Stereo separation		45 dB

AM Tuner Section

Usable sensitivity	5 µV
THD	0.5%
Selectivity	30 dB
Image rejection	45 dB
I.F. rejection	35 dB
S/N ratio (30% mod., 50 mV input)	45 dB

Physical Specifications

Width x Depth x Height	42 x 27.3 x 8 cm. 6.5 x 10 3/4 x 3 3/8 in.
Net Weight	5.5 kg (12.1 lbs)
Shipping Weight	6.8 kg (15 lbs)
Power Consumption	50/60 Hz at 110, 120, 220, or 240 VAC 150 W

Specifications are those in effect at the time of printing. NAD reserves the right to change specifications or designs at any time without notice.

Industrial Design: REINHOLD WEISS DESIGN/CHICAGO

ALIGNMENT METHOD

AUDIO SECTION 7220PE

IMPORTANT

Speaker Impedance switch should be in 8 ohm position while adjusting center volatge and idling current.

INITIAL ADJUSTMENT (No load connected)

A. CENTER VOLTAGE

1. Connect DC millivoltmeter to L channel output terminals.
2. Turn on and adjust to 0 V +- 30mV with VR411 (100 ohm).
   Connect DC millivoltmeter to R channel output terminals and adjust VR412 to 0 V +- 30mV.

B. IDLING CURRENT

1. Remove solder short across R455 and R456.
2. Connect DC millvoltmeter across P403,P404 (output transistor's collector resistor) and adjust R443 for 26-30mV reading on meter.
   Repeat adjust with R444, connecting meter across P405,P406.
3. Leave power on for minimum 5 minutes.

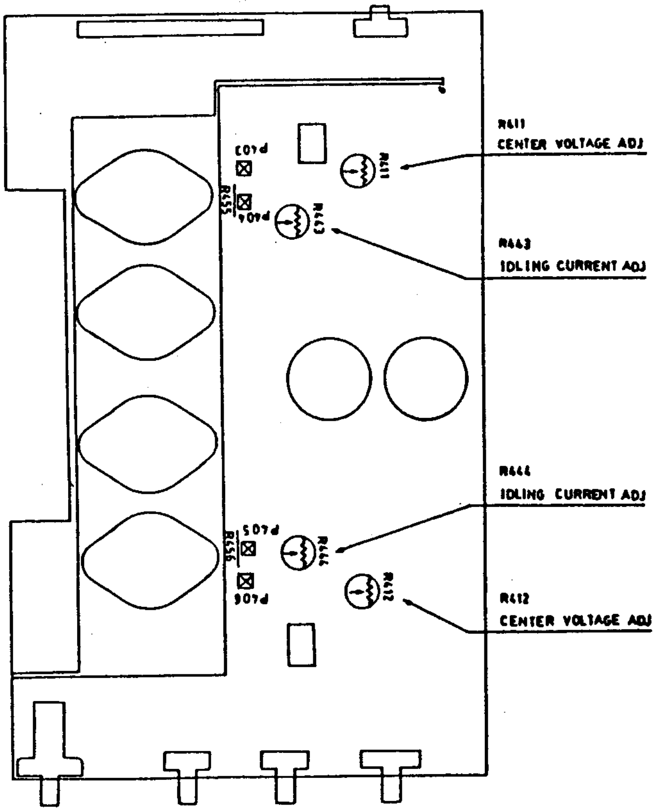
FINAL ADJUSTMENT

C. CENTER VOLTAGE

1. Repeat step A above.

D. IDLING CURRENT

1. Repeat step B and adjust with R443, R444 for 30mV reading on meter.
2. After the alignment is finished, 1 ohm resistor R455,R456 is shorted by solder short.


R411
CENTER VOLTAGE ADJ
R443
IDLING CURRENT ADJ
R444
IDLING CURRENT ADJ
R412
CENTER VOLTAGE ADJ
P403
R455
P404
R411
R443
P405
R456
P406
R444
R412

AMPLIFIER ADJUSTMENT POINTS

FM ALIGNMENTS

NECESSARY INSTRUMENTATION

FM GENERATOR (less than 0.05% THD)
STEREO GENERATOR (less than 0.05% THD, more than 50 dB separation at 1 KHz.
AUDIO GENERATOR (not necessary if FM generator has built in sweep; i.e. SOUND TECHNOLOGY ST 1000A and ST 1020A)
2 AC VTVM's (or one with left/right channel switch)
THD ANALYZER (resolution better than 0.1%)
OSCILLOSCOPE (5mV or better sensitivity, X input capability)
FREQUENCY COUNTER
VOM or DMM (high impedance, must read in mV)
DIODE DETECTOR PROBE
COPPER/FERRITE INDUCTOR

IMPORTANT While all FM generator output levels hereafter are referred to the 300 ohm input, 75 ohm input can be used, but be aware of possible equipment groundloops and divide the RF output level by 2.

Before alignments commence set input selector to tuner and release tape, mono and FM NR. defeat switches (out)

ALIGNMENT OF FRONTEND should only be necessary after repair to frontend or crystal oscillator circuits (pin 2 and 3 on Q911)

A. TUNING VOLTAGE (OSCILLATOR)

It is essential to check tuning voltage before aligning the rest of th frontend.

1. Connect DMM between shield and pin 5 on frontend.
2. Tune to 108 MHz and adjust L 101 if voltage is incorrect.
   SPECIFICATION 20.5V +- 0.5V
3. Tune to 87.5 MHz and read voltage, repeat step 2 and 3 if incorrect.
   SPECIFICATION 3V +- 0.5V

B. RF ADJUSTMENT (TRACKING)

1. Connect RF generator to antenna input and detectorprobe to pin 1,Q104 (IF DETECTOR) with ground to detectorshield. Adjust sensitivity of oscilloscope to maximum (5mV or better) and modulate FM generator sweep +- 300 KHz or more WITH modulating (sweep) signal connected to X-imput of oscilloscope.
2. Set tuner to 90 MHz, enter into preset 1, and tune generator so that curve appars on oscilloscope. Turn down RF input level so that curve covers approximately 1/2 of oscilloscope display.
3. Check alignments of L 2 - L 4 - L 5 by inserting copper/ferrite inductor close to them while watching curve on oscilloscope. Curve should decrease in height with either ferrite (same as increasing inductance, i.e. more core) or with copper (same as decreasing inductance, i.e. extend size of coil). If curve increases in size more than 10% adjust only the coil which reacts incorrectly. Adjust coils by gently extend or contract the aircoil with a non-metallic and non-static tool (i.e. plastic knit-pin or a wooden stick). Be careful not to deform coil.
4. Set tuner to 105MHz, enter into preset 2, and tune generator so that curve appears on oscilloscope.
5. Check L 2 - L 4 - L 5 again with the ferrite/copper inductor. Curve should not increase more than 10% on any of the coils.
6. Repeat step 2 + 3 + 4 + 5 if curve height is outside of telerances, if necessary distribute the error between 90 and 105 MHz. Check tuning voltage again if tolerances not possible to achieve.

C. IF ADJUSTMENT

1. Set tuner to approximately 98 MHz (the tuner must be tuned to an unoccupied frequency) enter into preset 3, and tune FM generator to display a curve on the oscilloscope.
2. Adjust I 1 (IFT tuner frontend) to maximum and symmetrical curve on th display, using as little input signal as possible.

D. DETECTOR COARSE ADJUSTMENT (OPTIONAL, NEEDED ONLY IF DETECTOR WAS REPAIRED).

1. Reduce sweep modulation level to +/- 75 kHz and set input level to 300 uv.
2. Adjust FM generator frquency so that both legs of the inverted U-shaped curve are equally high on the display. The curve should be almost perfectly symmetrical.
3. Disconnect detectorprobe from tuner and oscilloscope. Connect either of the tape rec. outputs to the oscilloscope.
4. Adjust I 102 primary (closest to the rear of unit) to maximum curveheight and I 103 secondary (closest to the front of unit) to minimum curveheight and straightest possibe line. Go back and forth between primarv and secondary till both are peaked.

NOTE: Both the cores should be within 1.5 mm from the top of the form.

E. DETECTOR ALIGNMENTS (FINAL)

1. Disconnect detectorprobe and connect tape rec. outputs to VTVM's, oscilloscope and distortion analyzer.
2. Switch stereo generator to 1 kHz 100%(+/- 75kHz) mono modulation and oscilloscope to normal internal sweep 0.2 mS and 0.5 V/cm sensitivity.
3. Detector reference frequency
   Reduce FM generator output level while monitoring THD from left channel. When THD increases to 3%, fine tune the FM generator frequency to minimum THD. Reduce FM generator output level and fine tune till no reduction in the 3% THD can be achieved by fine tuning. Use this frequency for all the following detector, MPX and FM NR adjustments.

NOTE: The typical input level for this 3% THD should be 1.6 uv to 2.3 uv. This is done only to "lineup" the frequency from the generator to the tuner's frequency. If IHF usable sensitivity (-30 dB THD+N= 3.16% THD+ N) is to be verified, a proper IHF bandpassfilter must be used.

4. Connect DMM ACROSS P112 (negative) and P113 (positive). Set FM generator output level to 1000 uV.
5. Adjust I 102 primary (closest to the rear of unit) for 0 V on DMM.
   TOLERANCE +/- 50 mV
6. Adjust I 103 secondary (closest to the front of unit) for lowest THD.
   SPECIFICATION less than 0.1%.
7. Repeat steps 5 - 7 till no further improvements. Record the DMM's final reading for use later in the adjustment.

F. AUTOSEARCH LEVEL

1. Connect DMM between 117 and ground.
2. Increase FM generator level SET TO 10 uV and adjust R117 so that DMM reading goes from 8.5 V to approximately 0.55 V at 10 uV.
   TOLERANCE +/-0.15v

G. STEREO DECODER, MPX FILTERS.

1. VCO
   Connect a frequency counter between IC 6 pin 11 and ground.
2. Set FM generator to 1000 uv output and no modulation.
3. Adjust VR 3 for a 19000 Hz reading on the counter.
   TOLERANCE +/- 100Hz
4. Disconnect frquency counter and press FM NR. defeat switch (in).
5. Stereo switch threshold.
   Modulate FM generator 1 kHz 45% left only plus 19 kHZ PILOT 8 - 10%.
6. Increase FM generator level upwards from 0 and adjust VR 2 so that stereo light turns on and audio outputs as watched on VTVM and oscilloscope, switches to one channel only at 10 uv input level.
   TOLERANCE +5 uV

NOTE: When turning input level down the unit will switch into mono at a lower level, typically 5 - 7 uV.

7. Stero separation
   Set FM generator output to 1000 uv, modulate in mono only.
8. Adjust VR 4 for identical outputs in the two channels.
   TOLERANCE +/- 20mV.
9. Modulate FM generator left channel only and adjust VR 5 for minimum on right channel VTVM.
10. Modulate FM generator right channel only and adjust VR 5 for minimum on left channel VTVM.
11. If the minimum in step 9 and 10 are different, adjust VR 5 so that the readings are the same in both channels.
    SPECIFICATION better than 40dB separation
12. MPX filter
    Turn off audiomodulation, leaving pilot tone only. Disable IHF filter or external 19 kHz filter if used.
13. Adjust LPF 1 left channel and LPF 2 right channel for minimum output
    SPECIFICATION more than 60 dB suppression

AM ALIGNMENTS

Unless repairs khave been done to Oscillator Section, do not adjust AM OSC coil or Trimming Capacitor. If OSC Adjustment is needed, connect hight impedance voltmeter (preferably DMM) between P123 and ground.

A. OSC ADJUSTMENT

1. Tune unit to show 600KHz on display and adjust L102 to read 1.75V+-0.05V on DMM.

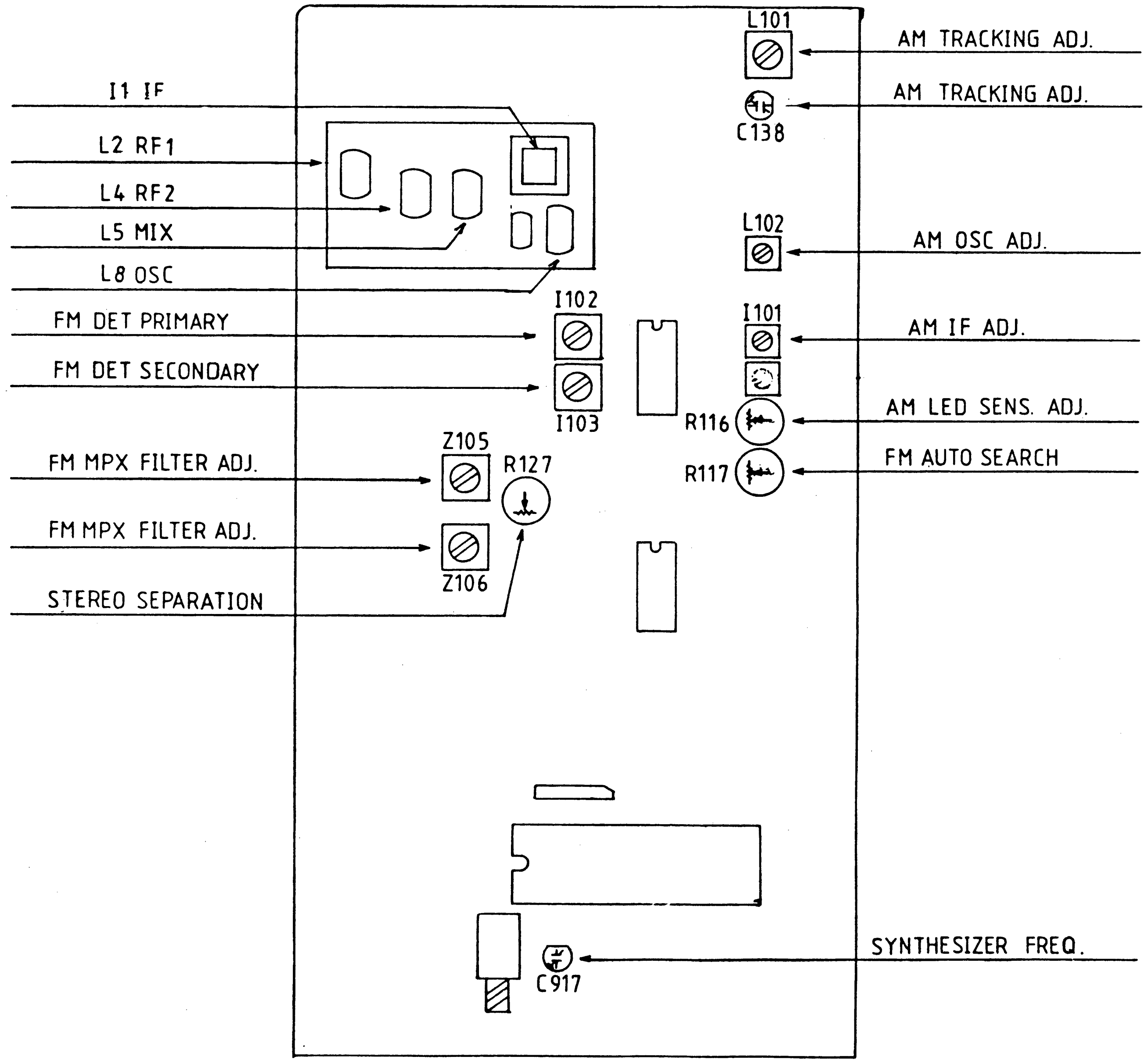
B. IF ADJUSTMENT

1. For IF adjustment and Tracaking adjustment connect VTVM to loudspeaker output (or tape output), only one channel connection needed, and connect signal generator to antenna terminals. Adjust generator for 30% modulation and approx. 100 uv input.
   Tune both generator and receiver to approx. 1000KHz, and adjust generator frequency for maximum reading on VTVM. Then adjust IFT2, and IFT3 for maximum reading on meter.

C. TRACKING ADJUSTMENT

1. Tune unit and generator to show approx. 600KHz and adjust L101 to maximum reading on VTVM.
2. Tune unit and generator to show approx. 1400KHz and adjust C138 (Trimming Capacitor) for maximum reading on VTVM.
3. Repeat step 1 and 2 unit no fkurhter imprivement.

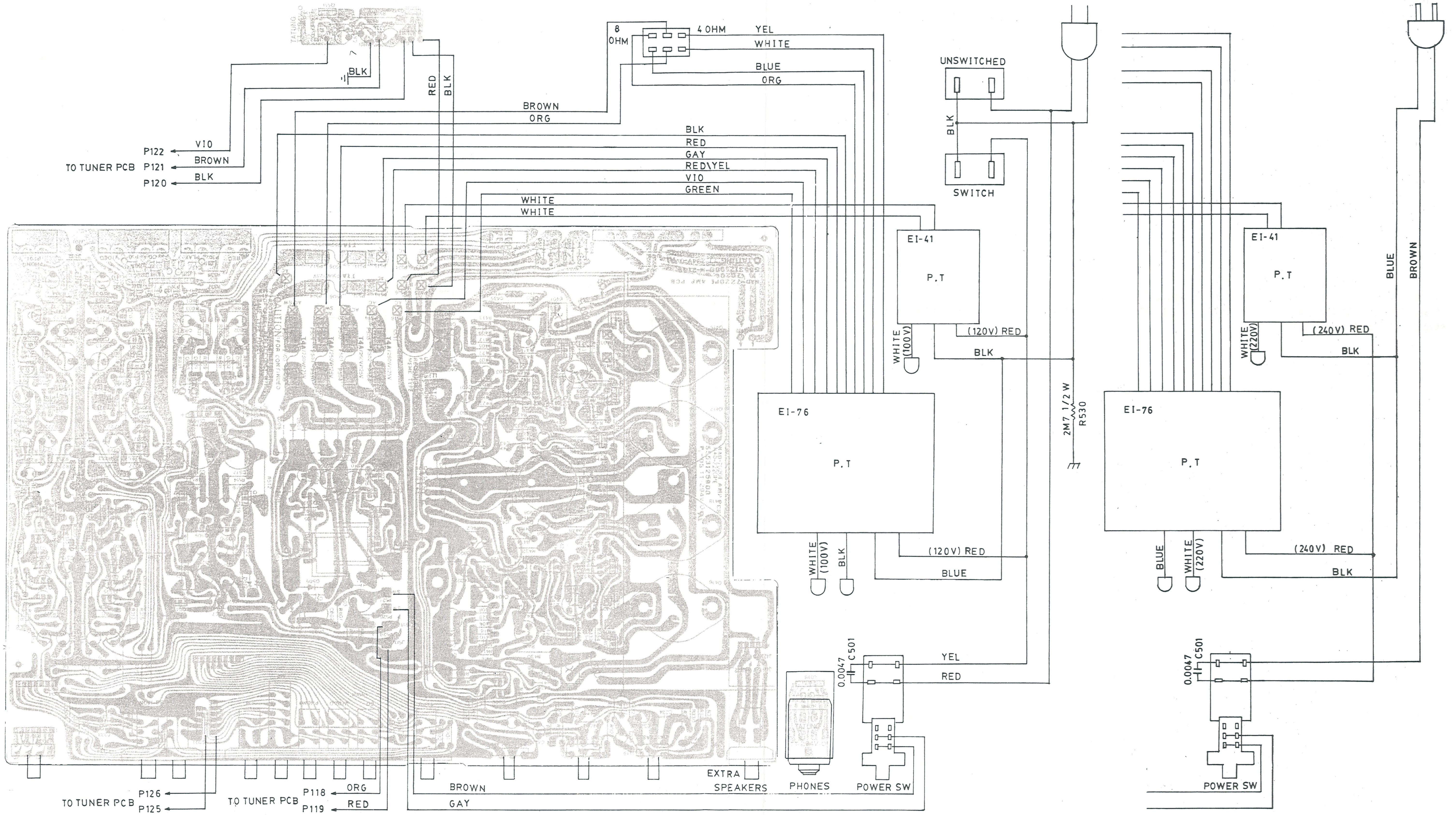
TUNER ADJUSTMENT POINTS

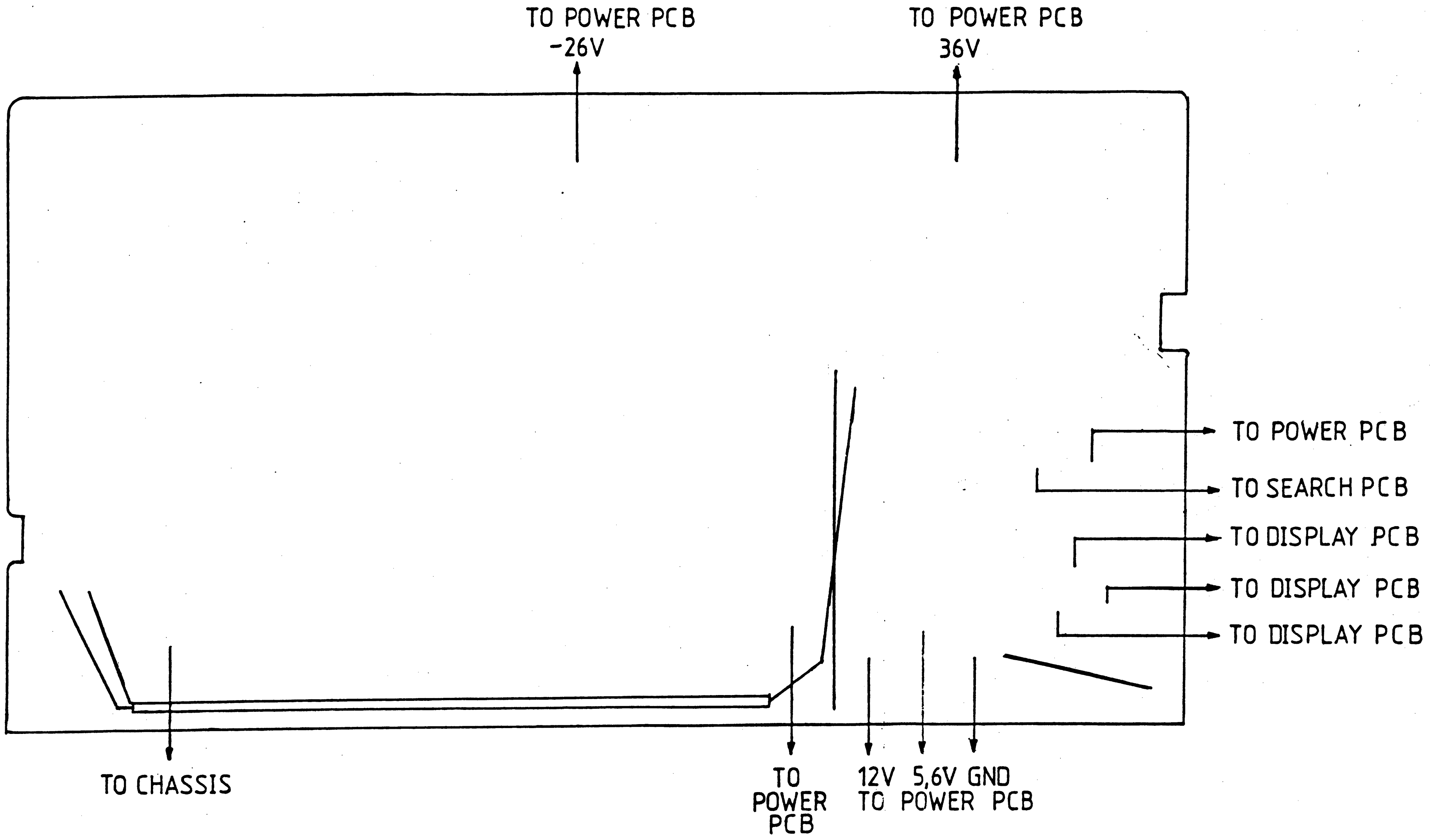

I1 IF
L2 RF1
L4 RF2
L5 MIX
L8 OSC
FM DET PRIMARY
FM DET SECONDARY
FM MPX FILTER ADJ.
FM MPX FILTER ADJ.
STEREO SEPARATION
L101
C138
L102
I102
I101
I103
Z105
R127
Z106
R116
R117
C917
AM TRACKING ADJ.
AM TRACKING ADJ.
AM OSC ADJ.
AM IF ADJ.
AM LED SENS. ADJ.
FM AUTO SEARCH
SYNTHESIZER FREQ.

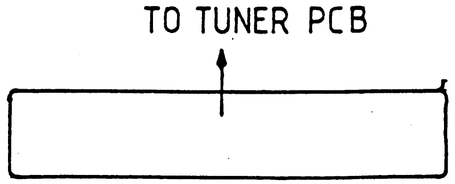
AMPLIFIER PCB LAYOUT AND WIRING DIAGRAM

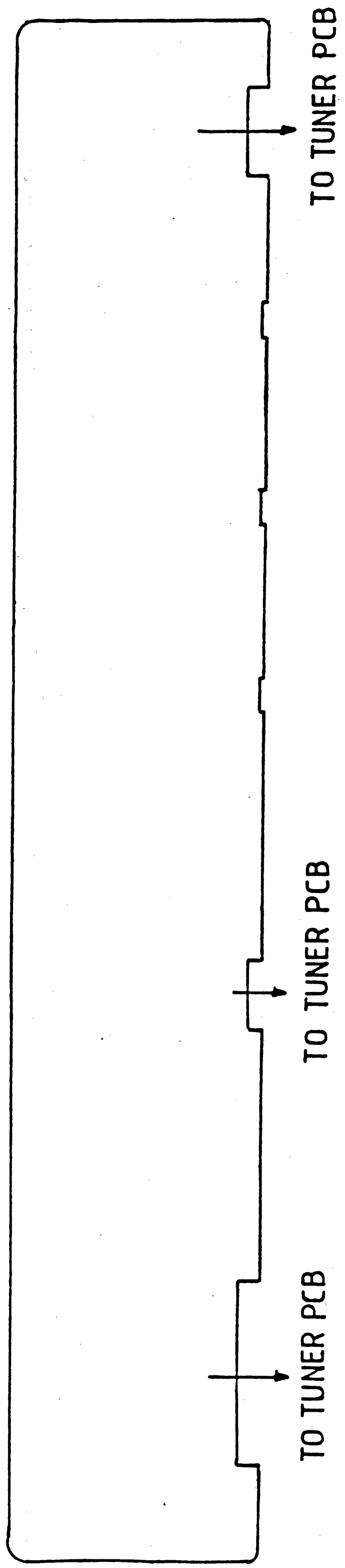
For versions A, A1.

For versions B, B1, C, C1.

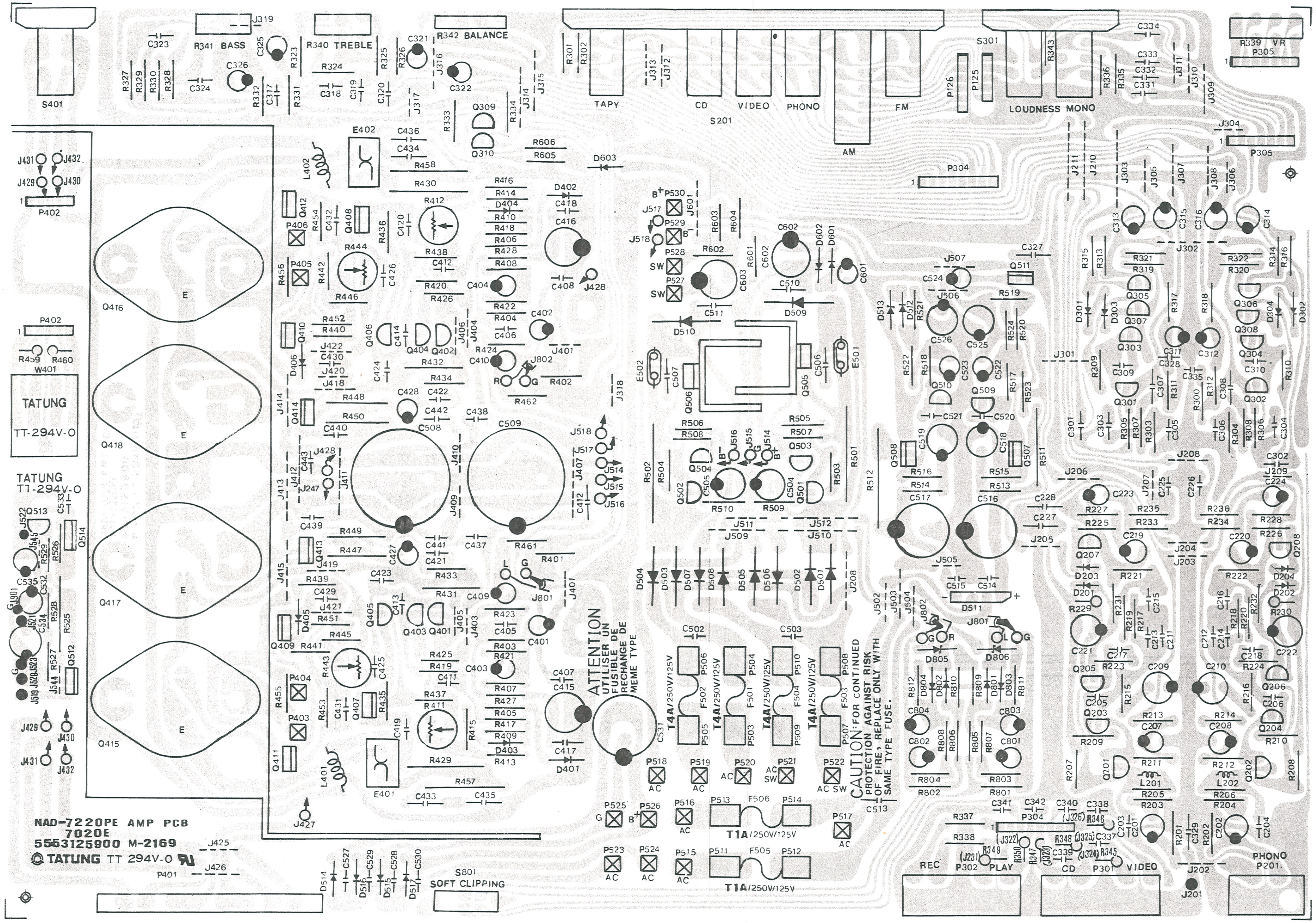

8 OHM
4 OHM
YEL
WHITE
BLUE
ORG
BLK
RED
BLK
BROWN
ORG
BLK
RED
GAY
RED\YEL
VIO
GREEN
WHITE
WHITE
P122
VIO
BROWN
TO TUNER PCB P121
BLK
P120
UNSWITCHED
BLK
SWITCH
EI-41
P.T
WHITE (100V)
(120V) RED
BLK
2M7 1/2 W
R530
EI-76
P.T
WHITE (100V)
BLK
(120V) RED
BLUE
0.0047
C501
YEL
RED
EXTRA SPEAKERS
PHONES
POWER SW
TO TUNER PCB
P126
P125
TO TUNER PCB
P118
P119
ORG
RED
BROWN
GAY
EI-41
P.T
WHITE (220V)
(240V) RED
BLK
BLUE
BROWN
EI-76
P.T
BLUE
WHITE (220V)
(240V) RED
BLK
0.0047
C501
POWER SW


TO POWER PCB -26V
TO POWER PCB 36V
TO POWER PCB
TO SEARCH PCB
TO DISPLAY PCB
TO DISPLAY PCB
TO DISPLAY PCB
TO CHASSIS
TO POWER PCB
12V 5,6V GND TO POWER PCB

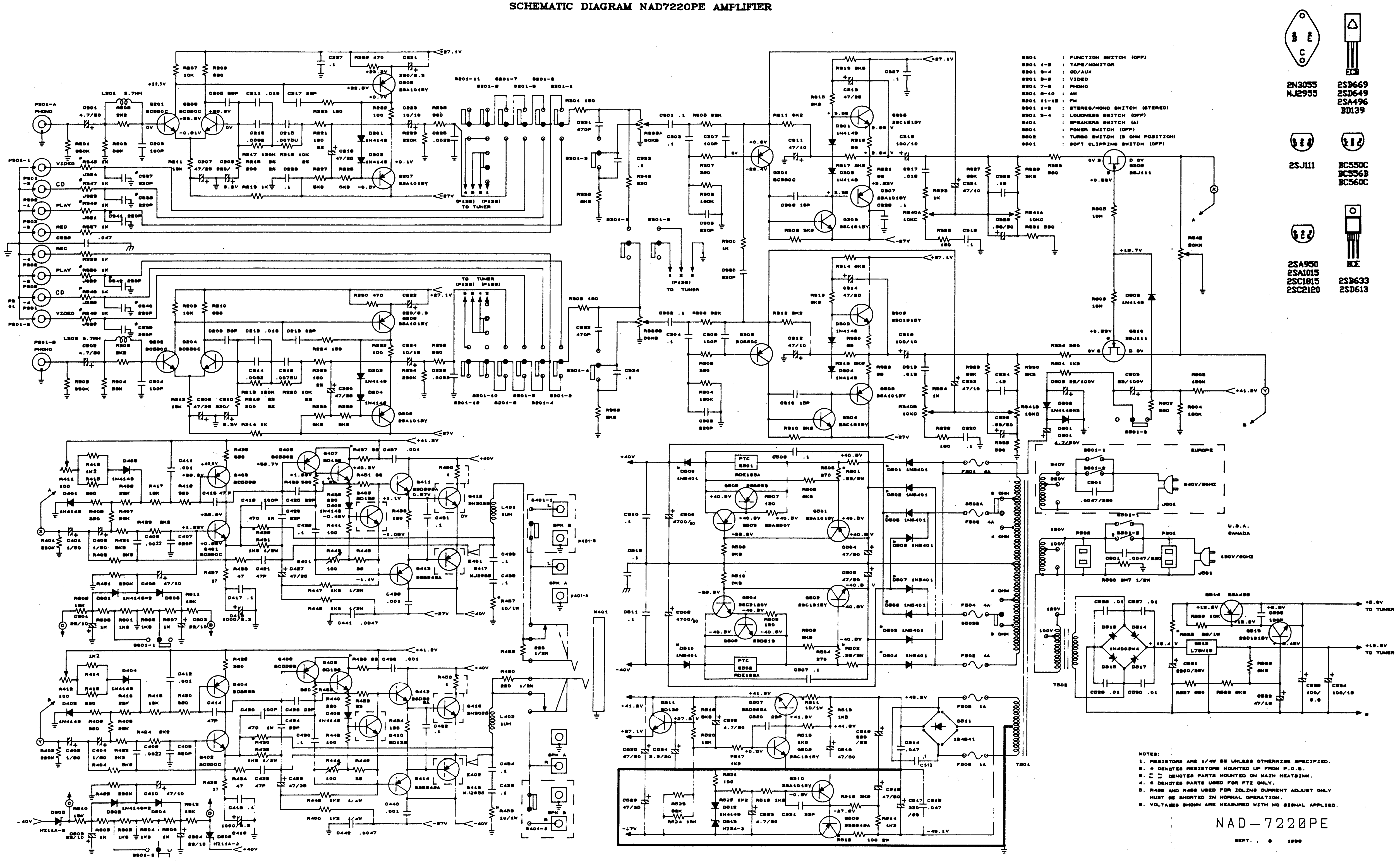

TO TUNER PCB


TO TUNER PCB
TO TUNER PCB
TO TUNER PCB

AMPLIFIER PCB LAYOUT


S401
R341 BASS
R340 TREBLE
R342 BALANCE
TAPY
CD
VIDEO
PHONO
FM
AM
S201
S301
LOUDNESS MONO
R339 VR
P305
P304
P402
W401
TATUNG
TT-294V-0
TATUNG
TT-294V-0
E402
E401
E501
E502
ATTENTION
UTILISER UN
FUSIBLE DE
RECHANGE DE
MEME TYPE
T4A/250V/125V
T4A/250V/125V
T4A/250V/125V
T4A/250V/125V
F502
F501
F504
F503
CAUTION: FOR CONTINUED
PROTECTION AGAINST RISK
OF FIRE, REPLACE ONLY WITH
SAME TYPE FUSE.
F506
T1A/250V/125V
F505
T1A/250V/125V
AC
AC SW
NAD-7220PE AMP PCB
7020E
5553125900 M-2169
TATUNG TT 294V-0
P401
S801
SOFT CLIPPING
REC
P302 PLAY
CD
P301 VIDEO
PHONO
P201
J201
J202

SCHEMATIC DIAGRAM NAD7220PE AMPLIFIER


P501-A PHONO
P501-1 VIDEO
CD
PLAY
REC
P501-B PHONO
L201 5.7MH
L202 5.7MH
Q201 BC550C
Q202 BC550C
TO TUNER
(P128)
+27.1V
-27V
+41.8V
-40V
+40V
SPK A
SPK B
P401-A
P401-B
T501
F501 4A
F502 4A
F503 4A
F504 4A
F505 1A
F506 1A
PTC
240V/50HZ
120V/60HZ
EUROPE
U.S.A. CANADA
+5.9V TO TUNER
+12.9V TO TUNER
2N3055
MJ2955
2SB669
2SD649
2SA496
BD139
2SJ111
BC550C
BC556B
BC560C
2SA950
2SA1015
2SC1815
2SC2120
2SB633
2SD613

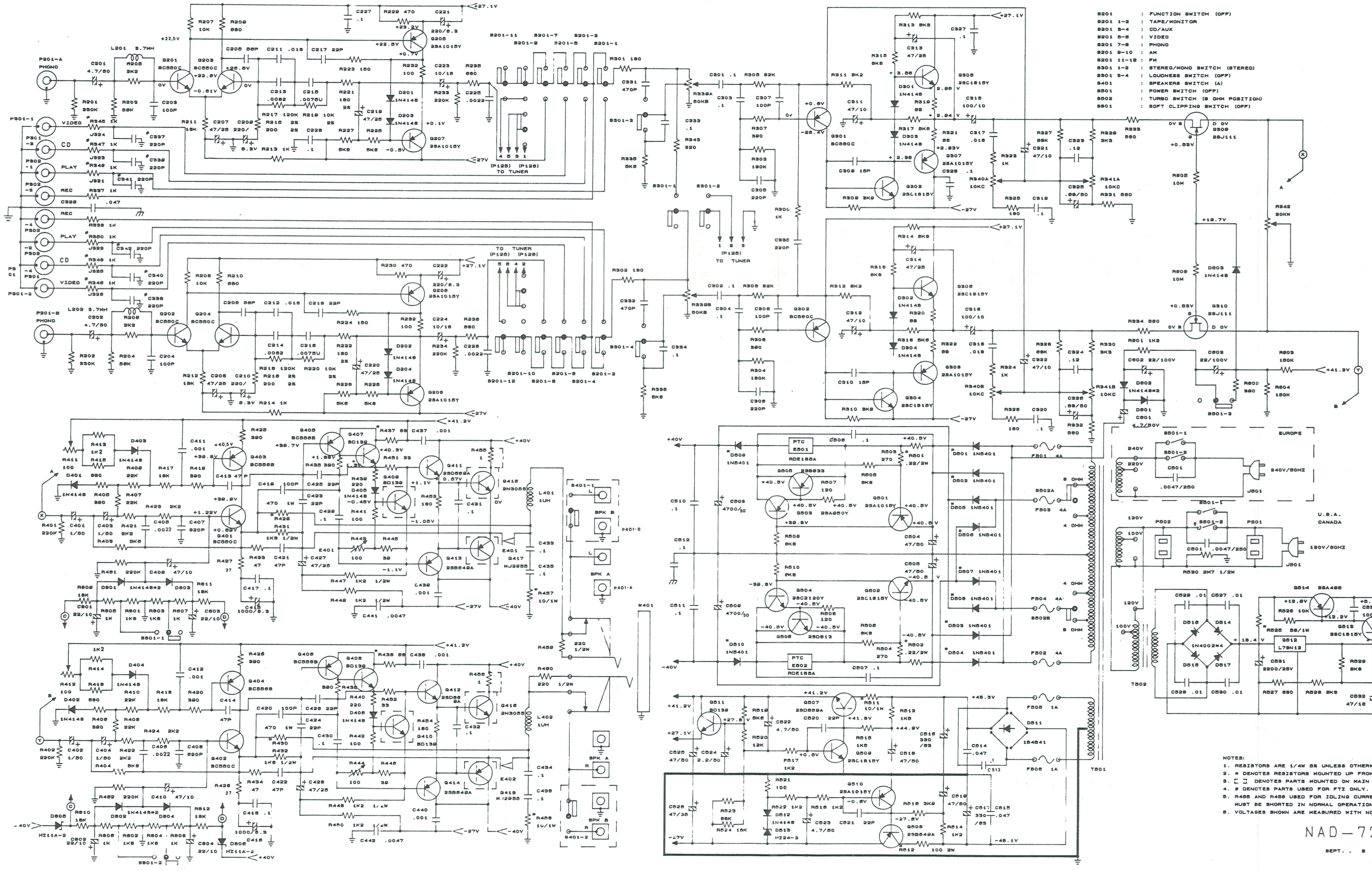
S201 : FUNCTION SWITCH (OFF)
S201 1-2 : TAPE/MONITOR
S201 3-4 : CD/AUX
S201 5-6 : VIDEO
S201 7-8 : PHONO
S201 9-10 : AM
S201 11-12 : FM
S301 1-2 : STEREO/MONO SWITCH (STEREO)
S301 3-4 : LOUDNESS SWITCH (OFF)
S401 : SPEAKERS SWITCH (A)
S501 : POWER SWITCH (OFF)
S502 : TURBO SWITCH (8 OHM POSITION)
S601 : SOFT CLIPPING SWITCH (OFF)

NOTES:
1. RESISTORS ARE 1/4W 5% UNLESS OTHERWISE SPECIFIED.
2. * DENOTES RESISTORS MOUNTED UP FROM P.C.B.
3. [ ] DENOTES PARTS MOUNTED ON MAIN HEATSINK.
4. # DENOTES PARTS USED FOR FTZ ONLY.
5. R488 AND R489 USED FOR IDLING CURRENT ADJUST ONLY MUST BE SHORTED IN NORMAL OPERATION.
6. VOLTAGES SHOWN ARE MEASURED WITH NO SIGNAL APPLIED.

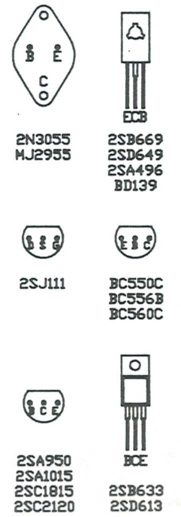
NAD-7220PE

SEPT. , 8 1988

SCHEMATIC DIAGRAM NAD7220PE AMPLIFIER


PHONO
VIDEO
CD
PLAY
REC
TO TUNER
SPK A
SPK B
EUROPE
240V/50HZ
U.S.A. CANADA
120V/60HZ
+5.8V TO TUNER
+12.8V TO TUNER
8 OHM
4 OHM
+41.2V
-40V
+27.1V
-27V

S201	:	FUNCTION SWITCH (OFF)
S201 1-2	:	TAPE/MONITOR
S201 3-4	:	CD/AUX
S201 5-6	:	VIDEO
S201 7-8	:	PHONO
S201 9-10	:	AM
S201 11-12	:	FM
S301 1-2	:	STEREO/MONO SWITCH (STEREO)
S301 3-4	:	LOUDNESS SWITCH (OFF)
S401	:	SPEAKERS SWITCH (A)
S501	:	POWER SWITCH (OFF)
S502	:	TURBO SWITCH (8 OHM POSITION)
S801	:	SOFT CLIPPING SWITCH (OFF)

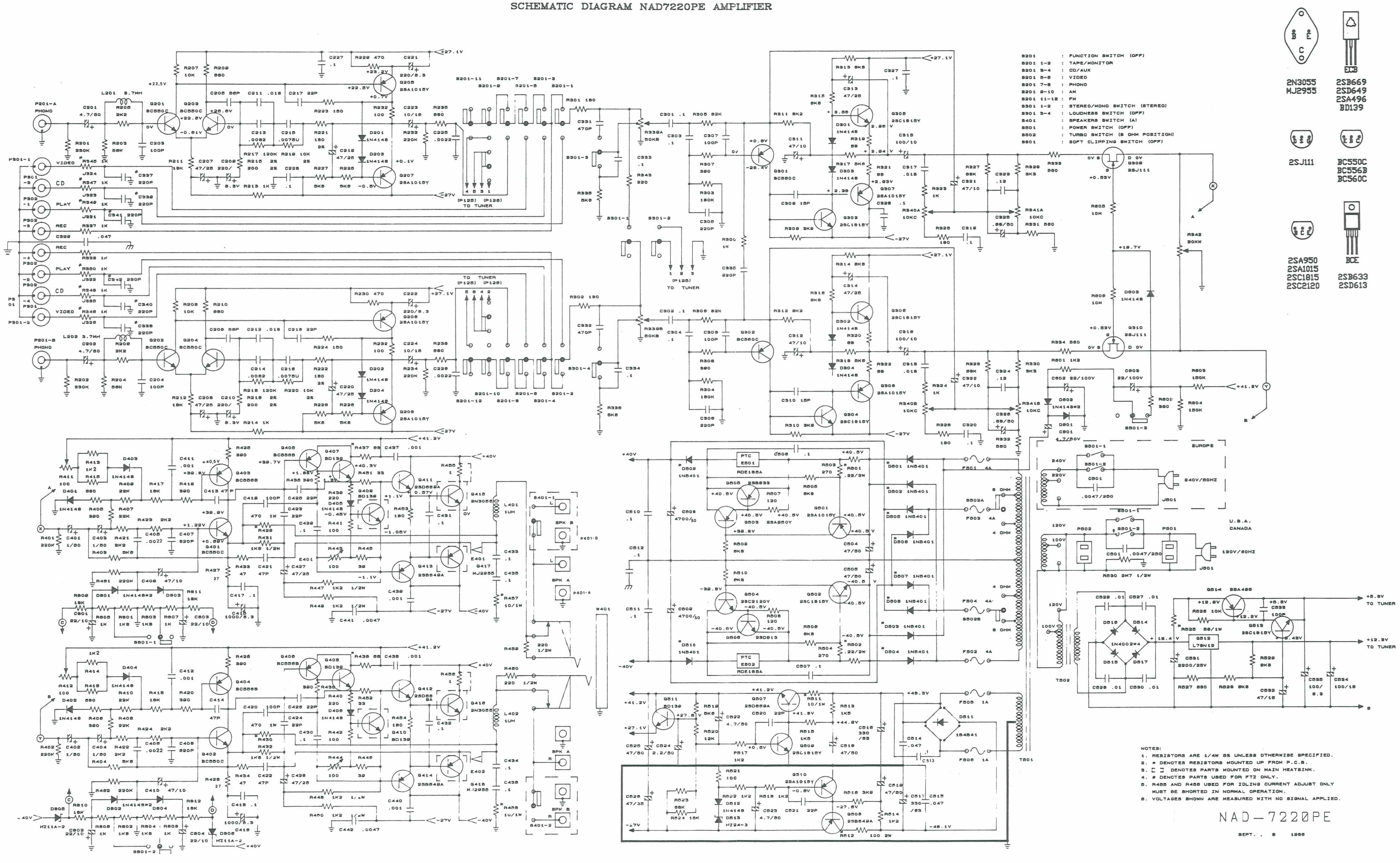

B
E
C
ECB
2N3055
MJ2955
2SB669
2SD649
2SA496
BD139
2SJ111
BC550C
BC556B
BC560C
2SA950
2SA1015
2SC1815
2SC2120
BCE
2SB633
2SD613

NOTES:
1. RESISTORS ARE 1/4W 5% UNLESS OTHERWISE SPECIFIED.
2. * DENOTES RESISTORS MOUNTED UP FROM P.C.B.
3. [ ] DENOTES PARTS MOUNTED ON MAIN HEATSINK.
4. # DENOTES PARTS USED FOR FTZ ONLY.
5. R455 AND R456 USED FOR IDLING CURRENT ADJUST ONLY MUST BE SHORTED IN NORMAL OPERATION.
6. VOLTAGES SHOWN ARE MEASURED WITH NO SIGNAL APPLIED.

NAD-7220PE

SEPT. , 8 1988

SCHEMATIC DIAGRAM NAD7220PE AMPLIFIER


P201-A
PHONO
P201-B
PHONO
P301-1
P301-2
VIDEO
CD
PLAY
REC
TO TUNER
(P128)
SPK A
SPK B
P401-A
P401-B
W401
+27.1V
-27V
+41.2V
-40V
+40V
EUROPE
240V
220V
240V/50HZ
U.S.A.
CANADA
120V
100V
120V/60HZ
J801
T801
T802
+8.5V
TO TUNER
+12.3V
TO TUNER
8 OHM
4 OHM
F801 4A
F802 4A
F803 4A
F804 4A
F805 1A
F806 1A
PTC
E801
E802
RDE188A
1N4002X4
L78N12
2SA496
2SC1815Y

S201	:	FUNCTION SWITCH (OFF)
S201 1-2	:	TAPE/MONITOR
S201 3-4	:	CD/AUX
S201 5-6	:	VIDEO
S201 7-8	:	PHONO
S201 9-10	:	AM
S201 11-12	:	FM
S301 1-2	:	STEREO/MONO SWITCH (STEREO)
S301 3-4	:	LOUDNESS SWITCH (OFF)
S401	:	SPEAKERS SWITCH (A)
S501	:	POWER SWITCH (OFF)
S502	:	TURBO SWITCH (8 OHM POSITION)
S801	:	SOFT CLIPPING SWITCH (OFF)

NOTES:
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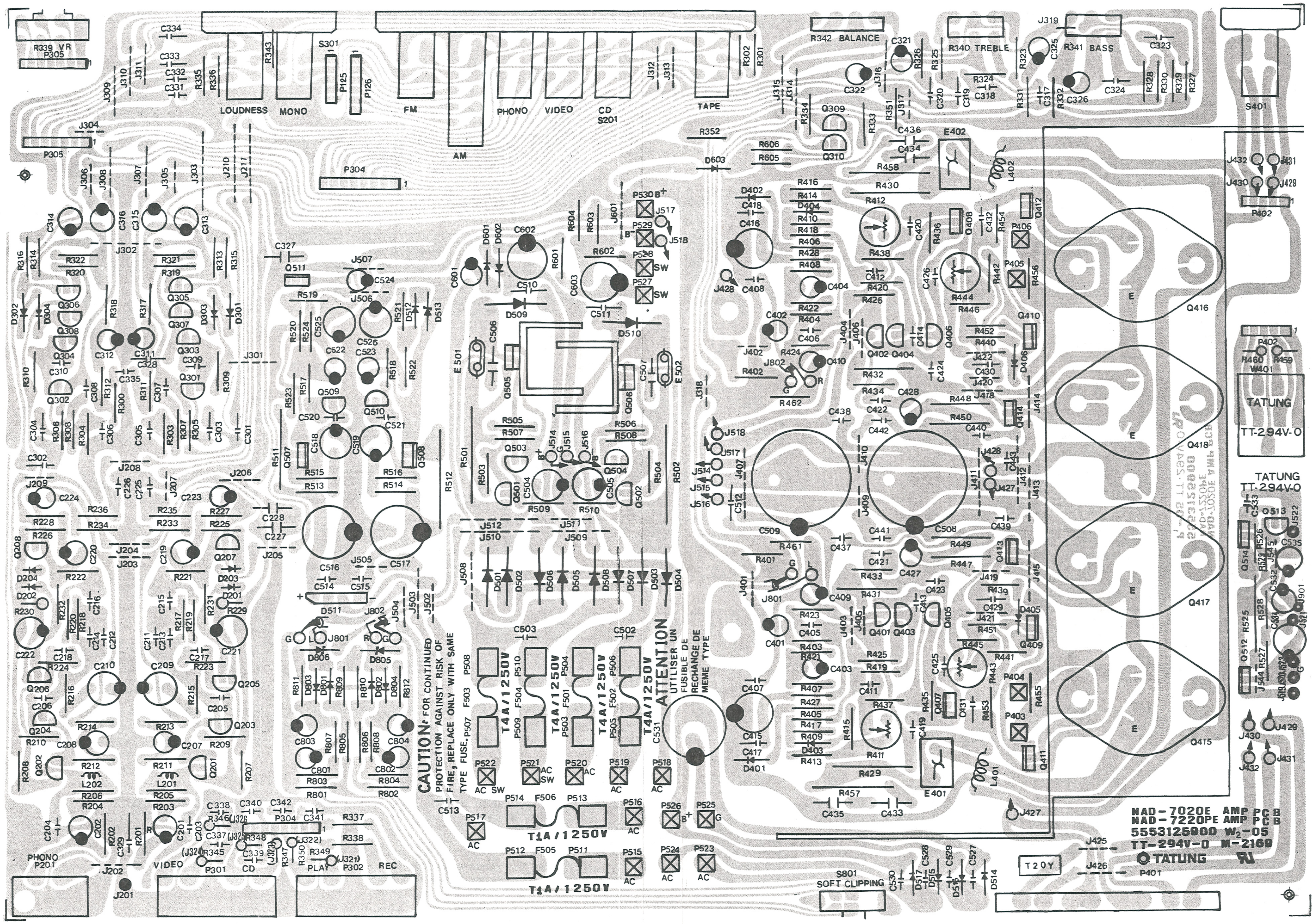
NAD—7220PE

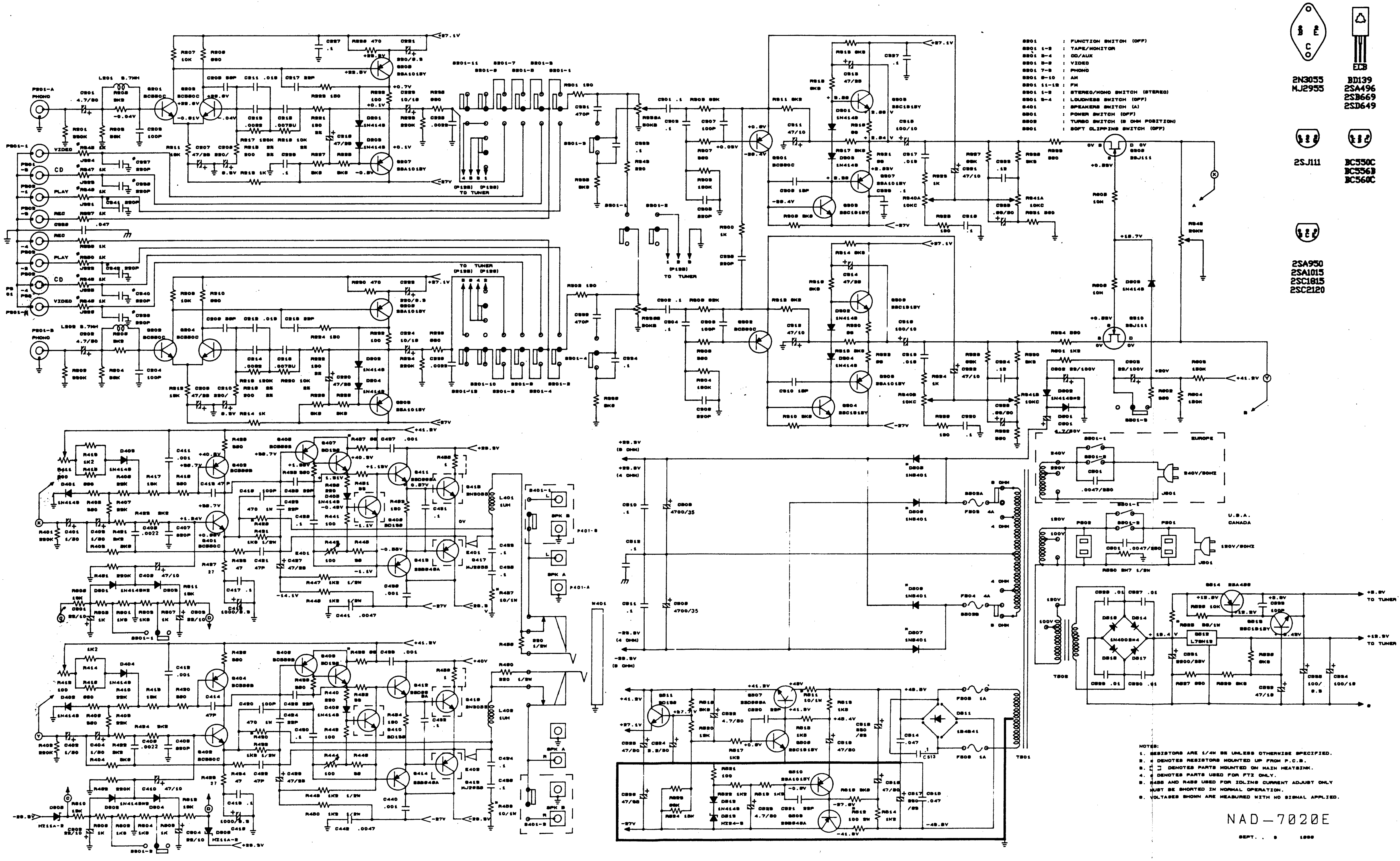
SEPT. , 8 1988

B
E
C
2N3055
MJ2955
ECB
2SB669
2SD649
2SA496
BD139
2SJ111
BC550C
BC556B
BC560C
2SA950
2SA1015
2SC1815
2SC2120
BCE
2SB633
2SD613

AMPLIFIER PCB LAYOUT


R339 VR
P305
LOUDNESS
MONO
FM
AM
PHONO
VIDEO
CD
S201
TAPE
R342 BALANCE
R340 TREBLE
R341 BASS
S401
P304
E402
E401
P402
W401
TATUNG
TT-294V-0
CAUTION: FOR CONTINUED PROTECTION AGAINST RISK OF FIRE, REPLACE ONLY WITH SAME TYPE FUSE.
ATTENTION UTILISER UN FUSIBLE DE RECHANGE DE MEME TYPE
T4A/1250V
T4A/1250V
T4A/1250V
T4A/1250V
T1A/1250V
T1A/1250V
F501
F502
F503
F504
F505
F506
AC SW
AC
SW
B+
G
PHONO P201
VIDEO
P301
CD
PLAY P302
REC
S801 SOFT CLIPPING
T20Y
P401
Q415
Q416
Q417
Q418
E
NAD-7020E AMP PCB
NAD-7220PE AMP PCB
5553125900 W2-05
TT-294V-0 M-2169
TATUNG

SCHEMATIC DIAGRAM NAD7020E AMPLIFIER


P201-A PHONO
VIDEO
CD
PLAY
REC
P201-B PHONO
TO TUNER
EUROPE
240V/50HZ
U.S.A. CANADA
120V/60HZ
SPK A
SPK B
+8.8V TO TUNER
+15.8V TO TUNER

S201	:	FUNCTION SWITCH (OFF)
S201 1-2	:	TAPE/MONITOR
S201 3-4	:	CD/AUX
S201 5-6	:	VIDEO
S201 7-8	:	PHONO
S201 9-10	:	AM
S201 11-12	:	FM
S301 1-2	:	STEREO/MONO SWITCH (STEREO)
S301 3-4	:	LOUDNESS SWITCH (OFF)
S401	:	SPEAKERS SWITCH (A)
S501	:	POWER SWITCH (OFF)
S502	:	TURBO SWITCH (8 OHM POSITION)
S601	:	SOFT CLIPPING SWITCH (OFF)

NOTES:
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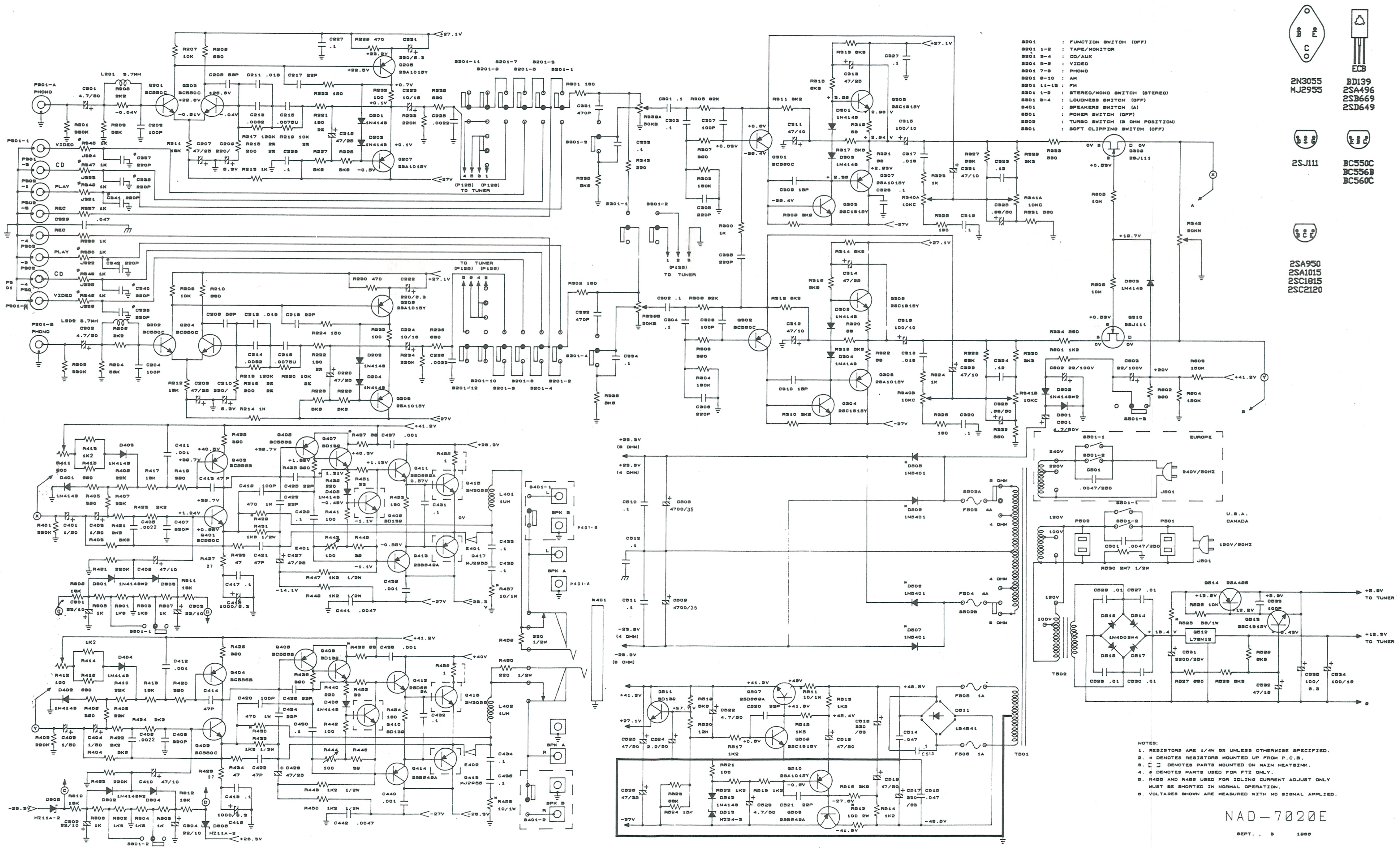
NAD-7020E

SEPT. . 8 1988

B E C
2N3055
MJ2955
ECB
BD139
2SA496
2SB669
2SD649
2SJ111
BC550C
BC556B
BC560C
2SA950
2SA1015
2SC1815
2SC2120

SCHEMATIC DIAGRAM NAD7020E AMPLIFIER


2N3055
MJ2955
BD139
2SA496
2SB669
2SD649
2SJ111
BC550C
BC556B
BC560C
2SA950
2SA1015
2SC1815
2SC2120
PHONO
VIDEO
CD
PLAY
REC
TO TUNER
EUROPE
U.S.A.
CANADA
240V/50HZ
120V/60HZ
+5.8V TO TUNER
+13.5V TO TUNER
SPK A
SPK B

S201 : FUNCTION SWITCH (OFF)
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S201 3-4 : CD/AUX
S201 5-6 : VIDEO
S201 7-8 : PHONO
S201 9-10 : AM
S201 11-12 : FM
S301 1-2 : STEREO/MONO SWITCH (STEREO)
S301 3-4 : LOUDNESS SWITCH (OFF)
S401 : SPEAKERS SWITCH (A)
S501 : POWER SWITCH (OFF)
S502 : TURBO SWITCH (8 OHM POSITION)
S801 : SOFT CLIPPING SWITCH (OFF)

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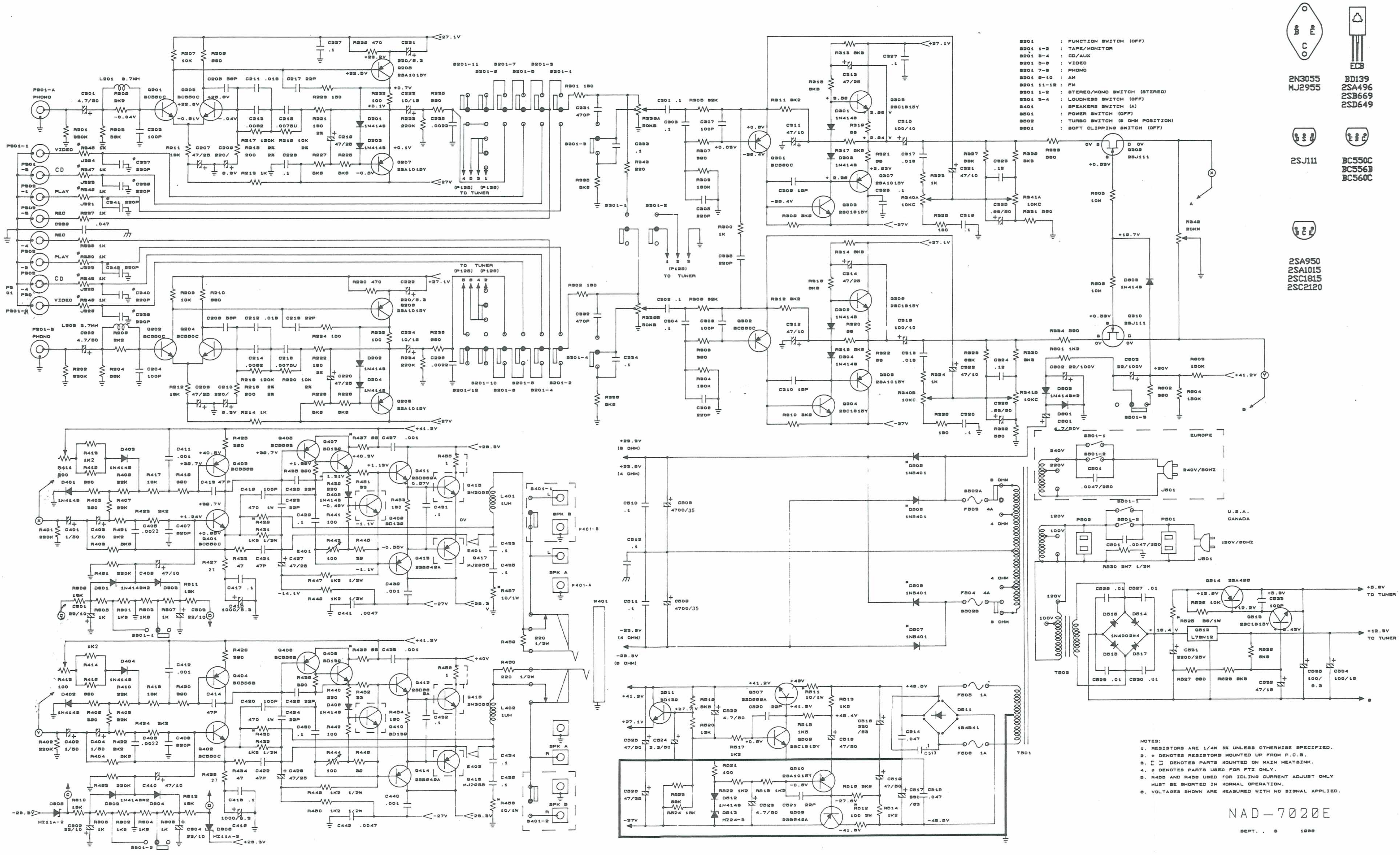
NAD—7020E

SEPT. , 9 1988

SCHEMATIC DIAGRAM NAD7020E AMPLIFIER


P801-A PHONO
P801-1 VIDEO
CD
PLAY
REC
P801-B PHONO
TO TUNER
(P125) (P126)
SPK A
SPK B
P401-A
P401-B
EUROPE
240V/50HZ
U.S.A. CANADA
120V/60HZ
8 OHM
4 OHM
+5.8V TO TUNER
+19.9V TO TUNER
2N3055
MJ2955
BD139
2SA496
2SB669
2SD649
ECB
2SJ111
BC550C
BC556B
BC560C
2SA950
2SA1015
2SC1815
2SC2120

S201 : FUNCTION SWITCH (OFF)
S201 1-2 : TAPE/MONITOR
S201 3-4 : CD/AUX
S201 5-6 : VIDEO
S201 7-8 : PHONO
S201 9-10 : AM
S201 11-12 : FM
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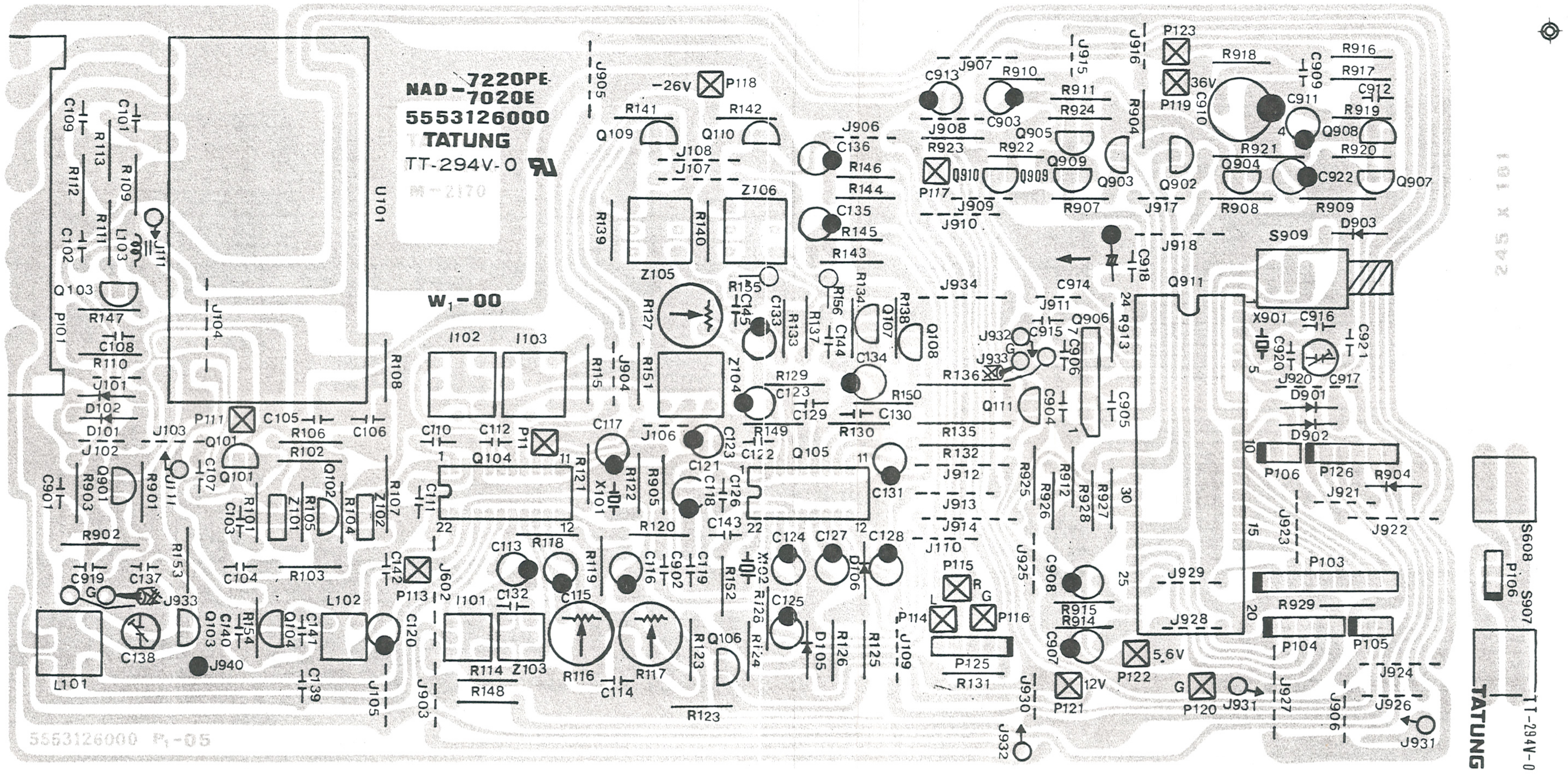
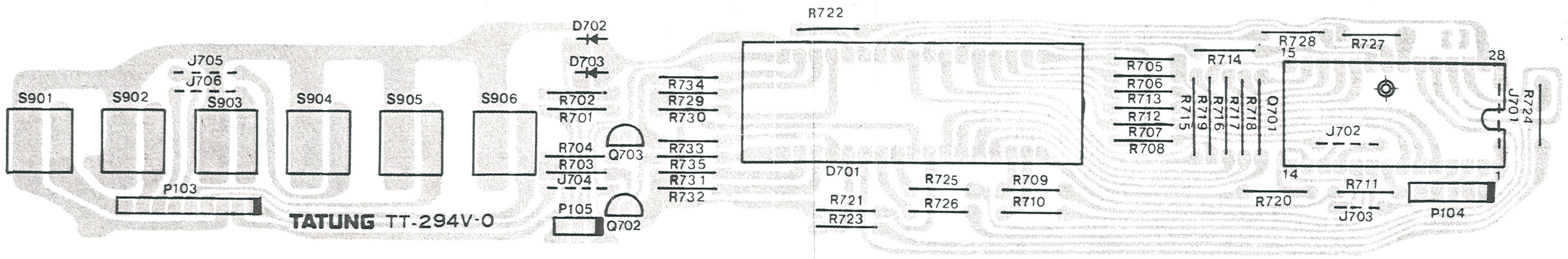
NAD—7020E

SEPT. . 9 1988

TUNER PCB LAYOUT

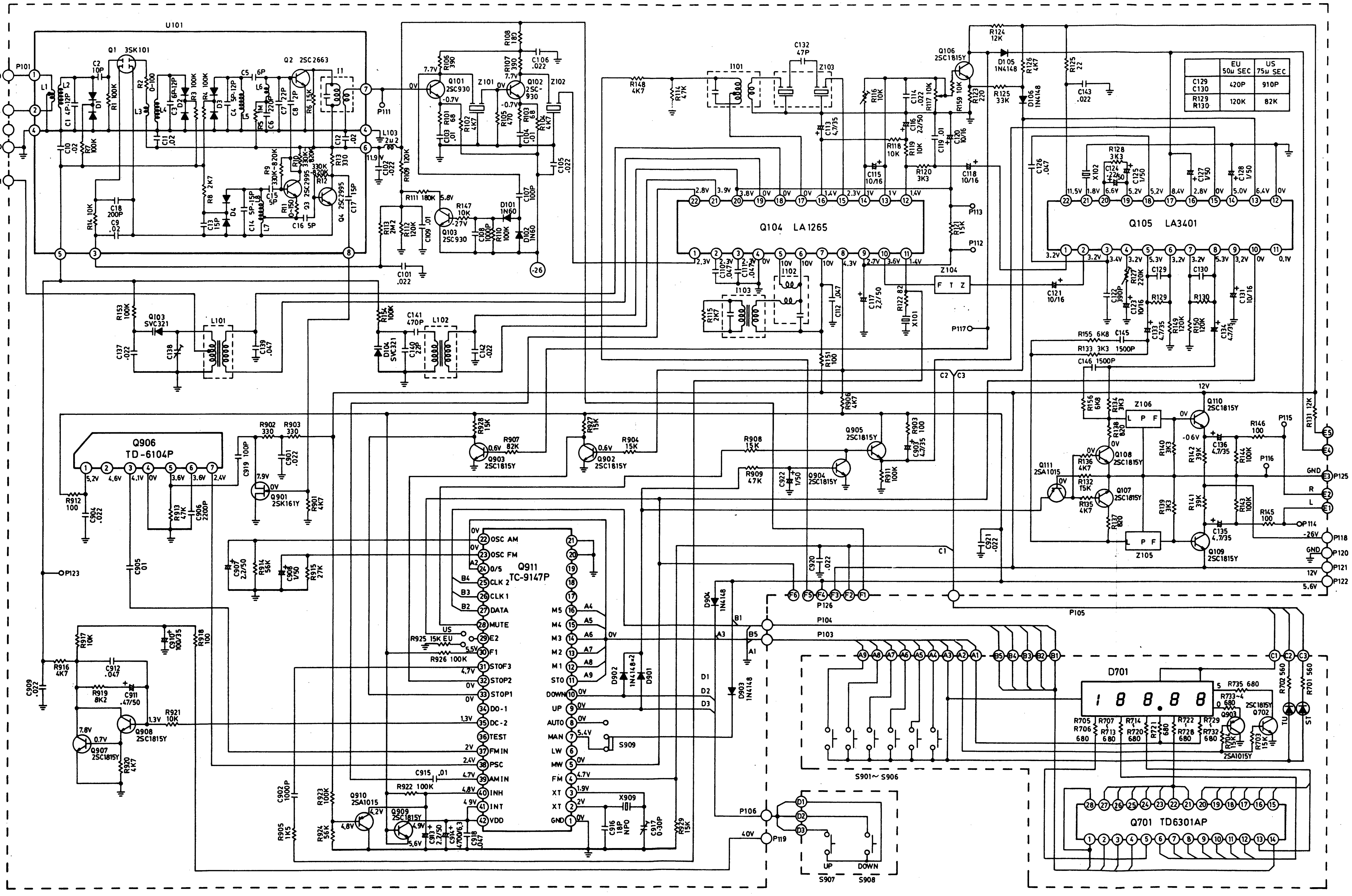

NAD-7220PE
7020E
5553126000
TATUNG
TT-294V-0
W1-00
5553126000 P1-05
245 x 161
TATUNG
TT-294V-0

Display, PCB Layout


TATUNG TT-294V-0

NAD-7220PE 7020e TUNER CIRCUIT DIAGRAM

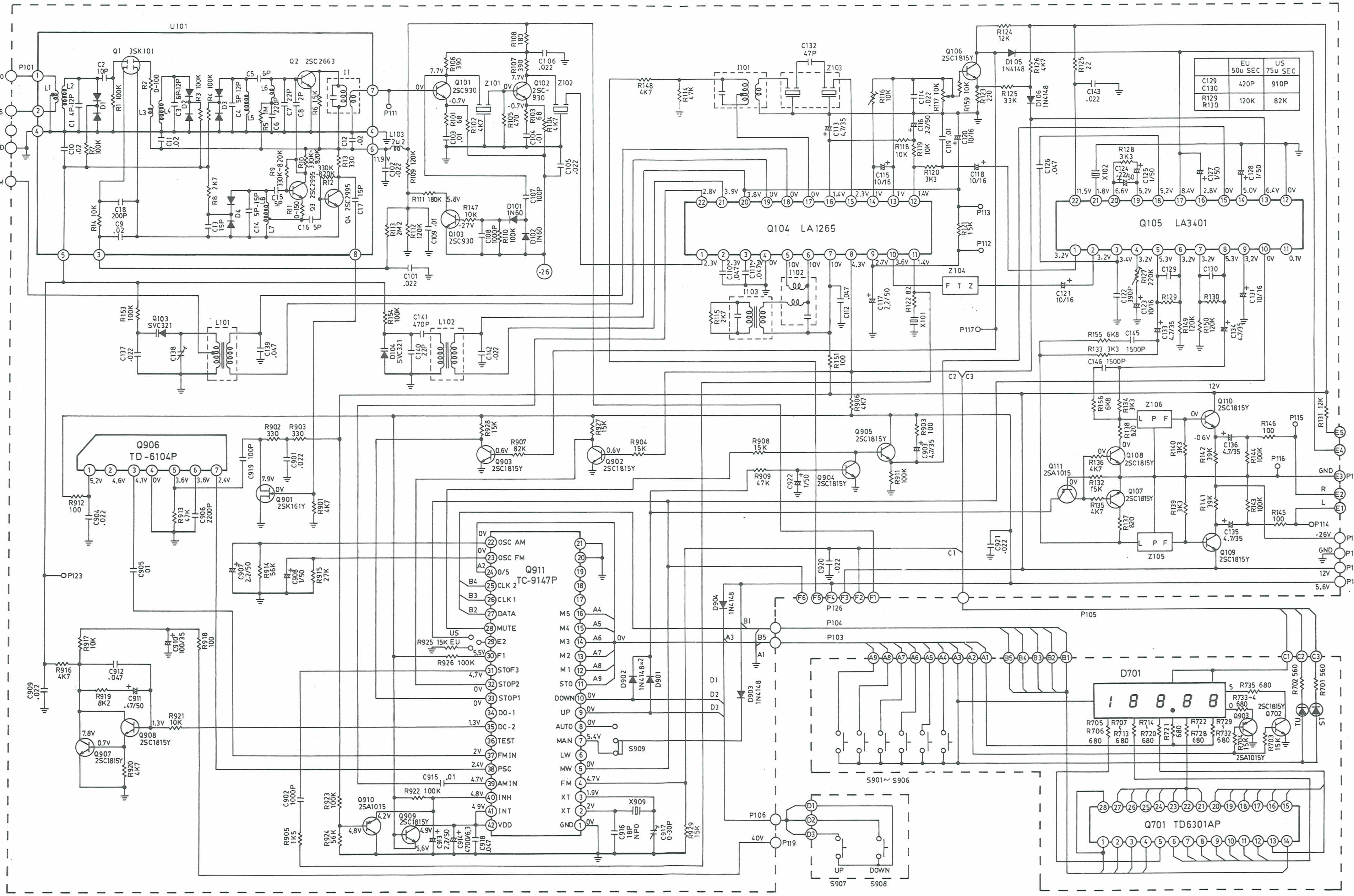
AUG-06, 1986
NOV-27.


U101
P101
300
300/75
GND
AM
Q1 3SK101
Q2 2SC2663
Q3 2SC2995
Q4 2SC2995
Q101 2SC930
Q102 2SC930
Q103 2SC930
Z101
Z102
I101
Z103
Q104 LA1265
Q105 LA3401
Q106 2SC1815Y
Z104
F T Z
L101
L102
Q103 SVC321
D104 SVC321
Q906 TD-6104P
Q901 2SK161Y
Q902 2SC1815Y
Q903 2SC1815Y
Q904 2SC1815Y
Q905 2SC1815Y
Q907 2SC1815Y
Q908 2SC1815Y
Q909 2SC1815Y
Q910 2SA1015
Q911 TC-9147P
Q107 2SC1815Y
Q108 2SC1815Y
Q109 2SC1815Y
Q110 2SC1815Y
Q111 2SA1015
Z105 L P F
Z106 L P F
D701
Q701 TD6301AP
Q702 2SC1815Y
Q703 2SA1015Y
S901~S906
S907 UP
S908 DOWN
S909
X909
P103
P104
P105
P106
P119
P125
P126
GND
R
L
-26V
12V
5.6V
TU
ST

	EU 50µ SEC	US 75µ SEC
C129 C130	420P	910P
R129 R130	120K	82K

NAD-7220PE 7020e TUNER CIRCUIT DIAGRAM

AUG-06, 1986
NOV-27,


U101
Q1 3SK101
Q2 2SC2663
Q3 2SC2995
Q4 2SC2995
Q101 2SC930
Q102 2SC930
Q103 2SC930
Q103 SVC321
Q104 LA1265
Q105 LA3401
Q106 2SC1815Y
Q107 2SC1815Y
Q108 2SC1815Y
Q109 2SC1815Y
Q110 2SC1815Y
Q111 2SA1015
Q901 2SK161Y
Q902 2SC1815Y
Q903 2SC1815Y
Q904 2SC1815Y
Q905 2SC1815Y
Q906 TD-6104P
Q907 2SC1815Y
Q908 2SC1815Y
Q909 2SC1815Y
Q910 2SA1015
Q911 TC-9147P
Q701 TD6301AP
Q702 2SC1815Y
Q903 2SA1015Y
D701
L101
L102
Z101
Z102
Z103
Z104
Z105 LPF
Z106 LPF
I101
I102
I103
X101
X102
X909
D101 1N60
D102 1N60
D104 SVC321
D105 1N4148
D106 1N4148
D901
D902 1N4148×2
D903 1N4148
D904 1N4148
300
300/75
GND
AM
P101
P104
P103
P105
P106
P111
P112
P113
P114
P115
P116
P117
P118
P119
P120
P121
P122
P123
P125
P126
C1
C2
C3
GND
R
L
12V
5.6V
-26V
40V
S901～S906
S907 UP
S908 DOWN
S909
OSC AM
OSC FM
0/5
CLK 2
CLK 1
DATA
MUTE
E2
F1
STOF3
STOP2
STOP1
DO-1
DC-2
TEST
FMIN
PSC
AMIN
INH
INT
VDD
M5
M4
M3
M2
M1
STO
DOWN
UP
AUTO
MAN
LW
MW
FM
XT
XT
GND
US
EU
TU
ST

	EU 50μ SEC	US 75μ SEC
C129 C130	420P	910P
R129 R130	120K	82K

7220PE / 7020e PART LIST

SYMBOL NO	PART NO	DESCRIPTION			REF
D701	5551200600	LED DISPLAY			
D702	6618009400	LED			
D703	6618010900	LED			
Q701	6645017800	IC. TD6301A			
Q702	6621015332	TR,2SC1815-Y			
Q703	6623002050	TR,2SA1015-Y			
R701 R702	5142856190	RES.CARB	560	+-5% 1/4W	
R703 R704	5142815390	RES.CARB	15K	+-5% 1/4W	
R705 R706	5142868190	RES.CARB	680	+-5% 1/4W	
R707 R708	5142868190	RES.CARB	680	+-5% 1/4W	
R709 R710	5142868190	RES.CARB	680	+-5% 1/4W	
R711 R712	5142868190	RES.CARB	680	+-5% 1/4W	
R713 R714	5142868190	RES.CARB	680	+-5% 1/4W	
R715 R716	5142868190	RES.CARB	680	+-5% 1/4W	
R717 R718	5142868190	RES.CARB	680	+-5% 1/4W	
R719 R720	5142868190	RES.CARB	680	+-5% 1/4W	
R721 R722	5142868190	RES.CARB	680	+-5% 1/4W	
R723 R724	5142868190	RES.CARB	680	+-5% 1/4W	
R725 R726	5142868190	RES.CARB	680	+-5% 1/4W	
R727 R728	5142868190	RES.CARB	680	+-5% 1/4W	
R729 R730	5142868190	RES.CARB	680	+-5% 1/4W	
R731 R732	5142868190	RES.CARB	680	+-5% 1/4W	
R733 R734	5142868190	RES.CARB	680	+-5% 1/4W	
R735	5142868190	RES.CARB	680	+-5% 1/4W	
S901 S902	5554413900	SW	TACT		
S903 S904	5554413900	SW	TACT		
S905 S906	5554413900	SW	TACT		
S907 S908	5554413900	SW	TACT		
C101 C102	5231822391	CAP.CER.	22000PF	+80-20% 50V	
C103 C104	5231810391	CAP.CER.	10000PF	+80-20% 50V	
C105 C106	5231822391	CAP.CER.	22000PF	+80-20% 50V	
C107	5247010191	CAP.CER.	100PF	+-5% 50V	
C108	5231510291	CAP.CER.	1000PF	+-20% 50V	
C109	5231810391	CAP.CER.	10000PF	+80-20% 50V	
C110 C111	5231847391	CAP.CER.	7000PF	+80-20% 50V	
C112	5231847391	CAP.CER.	7000PF	+80-20% 50V	
C113	5213647991	CAP.CER.	4.7MF	50V	
C114	5231822391	CAP.CER.	22000PF	+80-20% 50V	
C115 C118	5213310091	CAPE.CER.	10MFT	16V	
C116	5213622991	CAPE.CER.	2.2MF	50V	
C117	5213622912	CAPE.CER.	2.2MFU	50V	
C119	5231810391	CAPE.CER.	10000F	+80-20% 50V	
C120 C123	5213310091	CAPE.CER.	10MFT	16V	
C121	5213310012	CAPE.CER.	10MFT	16V	
C122	5247139191	CAPE.CER.	390F	+-10% 50V	
C124	5215000491	CAPE.CER.	.22MF	+-20% 50V	
C125	5213601091	CAP.CER.	1MF	50V	
C126	5222247301	CAPE.CER.	470000PF	+-10% 50V	
C127 C128	5213601091	CAP.CER.	1MF	50V	
C129 C130	5226191100	CAP.CER.	901PF	+-5%	
C131	5213310091	CAP.CER.	10MFT	16V	
C132	5242247091	CAP.CER.	47PF	+-5% 50V	
C133 C134	5213647991	CAP.CER.	4.7MF	50V	
Q904 Q905	6621015332	TR.	2SC1815-Y		
Q906	6645017700	IC.	TD6104P		
Q907 Q908	6621015332	TR.	2SC1815-Y		
Q909	6621015332	TR.	2SC1815-Y		
Q910	6623002050	TR.	2SA1015-Y		
Q911	6645017600	IC.	TC9147P		
R101	5142868090	RES.CARB	68	+-5% 1/4W	
R102 R104	5142847290	RES.CARB	4.7K	+-5% 1/4W	
R103	5142868090	RES.CARB	68	+-5% 1/4W	
R105	5142847290	RES.CARB	470	+-5% 1/4W	
R106 R107	5142839190	RES.CARB	390	+-5% 1/4W	
R108	5142818190	RES.CARB	180	+-5% 1/4W	
R109	5142812490	RES.CARB	120K	+-5% 1/4W	
R110	5142810490	RES.CARB	100K	+-5% 1/4W	
R111	5142818490	RES.CARB	180K	+-5% 1/4W	
R112	5142812490	RES.CARB	120K	+-5% 1/4W	
R113	5142822590	RES.CARB	2.2M	+-5% 1/4W	
R114	5142847390	RES.CARB	47K	+-5% 1/4W	
R115	5142827290	RES.CARB	2.7K	+-5% 1/4W	
R116 R117	5162310320	RES.VR		1/8W	
R118 R119	5142810390	RES.CARB	10K	+-5% 1/4W	
R120	5142833290	RES.CARB	3.3K	+-5% 1/4W	
R121	5142815390	RES.CARB	15K	+-5% 1/4W	
R122	5142882090	RES.CARB	82	+-5% 1/4W	
R123	5142822190	RES.CARB	220	+-5% 1/4W	
R124	5142812390	RES.CARB	12K	+-5% 1/4W	
R125	5142833390	RES.CARB	33K	+-5% 1/4W	
R126	5142847290	RES.CARB	4.7K	+-5% 1/4W	
R127	5162322420	RES.VR	220K	1/8W	
R128	5142833290	RES.CARB	3.3K	1/8W	
R129 R130	5142882390	RES.CARB	82K	+-5% 1/4W	
R131	5142812390	RES.CARB	12K	+-5% 1/4W	
R132	5142815390	RES.CARB	15K	+-5% 1/4W	
R133 R134	5142833290	RES.CARB	3.3K	+-5% 1/4W	
R135 R136	5142847290	RES.CARB	4.7K	+-5% 1/4W	
R137 R138	5142882190	RES.CARB	820	+-5% 1/4W	
R139 R140	5142833290	RES.CARB	3.3K	+-5% 1/4W	
R141 R142	5142839390	RES.CARB	39K	+-5% 1/4W	
R143 R144	5142810490	RES.CARB	100K	+-5% 1/4W	
R145 R146	5142810190	RES.CARB	100	+-5% 1/4W	
R147	5142810390	RES.CARB	100K	+-5% 1/4W	
R148	5142847290	RES.CARB	4.7K	+-5% 1/4W	
R149 R150	5142812490	RES.CARB	120K	+-5% 1/4W	
R151	5142810190	RES.CARB	100	+-5% 1/4W	
R152	5142822090	RES.CARB	22	+-5% 1/4W	
R153 R154	5142810490	RES.CARB	100K	+-5% 1/4W	
R155 R156	5145868206	RES.CARB	6.8K	+-5% 1/4W	
R159	5142810390	RES.CARB	10K	+-5% 1/4W	
R901	5142847290	RES.CARB	4.7K	+-5% 1/4W	
R902 R903	5142833190	RES.CARB	330	+-5% 1/4W	
R904	5142815301	RES.CARB	15K	+-5% 1/4W	
R905	5142815290	RES.CARB	1.5K	+-5% 1/4W	
R906	5142847290	RES.CARB	4.7K	+-5% 1/4W	
R907	5142882390	RES.CARB	82K	+-5% 1/4W	
R908	5142815390	RES.CARB	15K	+-5% 1/4W	
R909	5142847390	RES.CARB	47K	+-5% 1/4W	
R910 R912	5142810190	RES.CARB	100	+-5% 1/4W	
R911	5142810490	RES.CARB	100K	+-5% 1/4W	
R913	5142847390	RES.CARB	47K	+-5% 1/4W	
R914	5142856301	RES.CARB	56K	+-5% 1/4W	
C135 C136	5213647991	CAP.CER.	4.7MF	50V	
C137	5231822391	CAP.CER.	22000PF	+80-20% 50V	
C138	5552402900	TRIMER	300F	TZ03R	
C139	5231847391	CAP.CER.	47000PF	+80-20% 50V	
C140	5242222091	CAP.CER.	22PF	+-5% 50V	
C141	5226147100	CAP.POLY	470PF	+-5% 50V	
C142 C143	5231822391	CAP.CER.	22000PF	+80-20% 50V	
C145 C146	5231515201	CAP.CER.	1500PF	+-20% 50V	
C901	5231822391	CAP.CER.	22000PF	+80-20% 50V	
C902	5231510291	CAP.CER.	1000PF	+-20% 50V	
C903	5213647991	CAP.EL.	4.7MF	50V	
C904	5231822391	CAP.CER.	22000PF	+80-20% 50V	
C905	5231810391	CAP.CER.	10000PF	+80-20% 50V	
C906	5231522291	CAP.CER.	2200PF	+-20% 50V	
C907	5213622991	CAP.EL.	2.2MF	50V	
C908	5213601091	CAP.EL.	1MF	50V	
C909	5231822391	CAP.CER.	22000PF	+80-20% 50V	
C910	5213510112	CAP.EL.	100MFT	35V	
C911	5213647891	CAP.EL.	0.47MFU	50V	
C912	5231847391	CAP.CER.	47000PF	+80-20% 50V	
C913	5213622991	CAP.EL.	2.2MF	50V	
C914	5215001201	CAP.EL.	4700MFM	6.3V	
C915	5231810391	CAP.CER.	10000FPF	+80-20% 50V	
C916	5242218091	CAP.CER.	18PF	+-5% 50V	
C917	5552402900	TRIMMER	300F	TZ03R	
C918	5231847391	CAP.CER.	47000PF	+80-20% 50V	
C919	5247010191	CAP.CER.	100PF	+-5% 50V	
C920 C921	5231822391	CAP.CER.	22000PF	+80-20% 50V	
C922	5213601091	CAP.EL.	1MF	50V	
D101 D102	6612004001	DIODE.	IN60		
D103 D104	6614004900	DIODE.	SVC3214		
D105 D106	6613003030	DIODE	IN4148		
D901 D902	6613003030	DIODE	IN4148		
D903 D904	6613003030	DIODE	IN4148		
I101	5565105200	AM IFT	2150-3B4-W142		
I102	5565204300	FM DET-1	0204-3B4-W008		
I103	5565204400	FM DET-2	0204-3B4-W009		
P101	5556204410	TEERMINAL			
P102	5553126000	TUNER PCB			
P103	5556900820	PVC WIRE	PARALLE	9P	
P104	5556900450	PVC WIRE	PARALLE	5P	
P105 P106	5556900200	PVC WIRE	PARALLE	3P	
P111	5556201900	PIN			
P112 P113	5556201900	PIN			
P114 P115	5556201900	PIN			
P116 P117	5556201900	PIN			
P118 P119	5556201900	PIN			
P120 P121	5556201900	PIN			
P122 P123	5556201900	PIN			
P130	5556200800	LUG			
Q101 Q102	6621012101	TR.	2SC930E		
Q103	6621012101	TR.	2SC930E		
Q104	6644055700	IC	LA1265		
Q105	6644055800	IC	LA3401		
Q106 Q107	6621015332	TR.	2SC1815-Y		
Q108 Q109	6621015332	TR.	2SC1815-Y		
Q110	6621015332	TR.	2SC1815-Y		
Q111	6623002050	TR.	2SA1015-Y		
Q901	6625001301	TR.	2SK161-Y		
Q902 Q903	6621015332	TR.	2SC1815-Y		
D603D801	6613003030	DIODE	1N4148		
D802 D803	6613003030	DIODE	1N4148		
D804	6613003030	DIODE	1N4148		
D806	6615007900	DIOD	HZ-11A-2		
E401 E402	5554432210	BREAKER	A-35	3.5A	
E501 E502	5554432500	PTC SW	RDE185A		
F501 F502	5554309800	FUSE	125V/4A	UL/CSA	
F503 F504	5554309800	FUSE	125V/4A	UL/CSA	
F505 F506	5554309810	FUSE	125V/1A	UL/CSA	

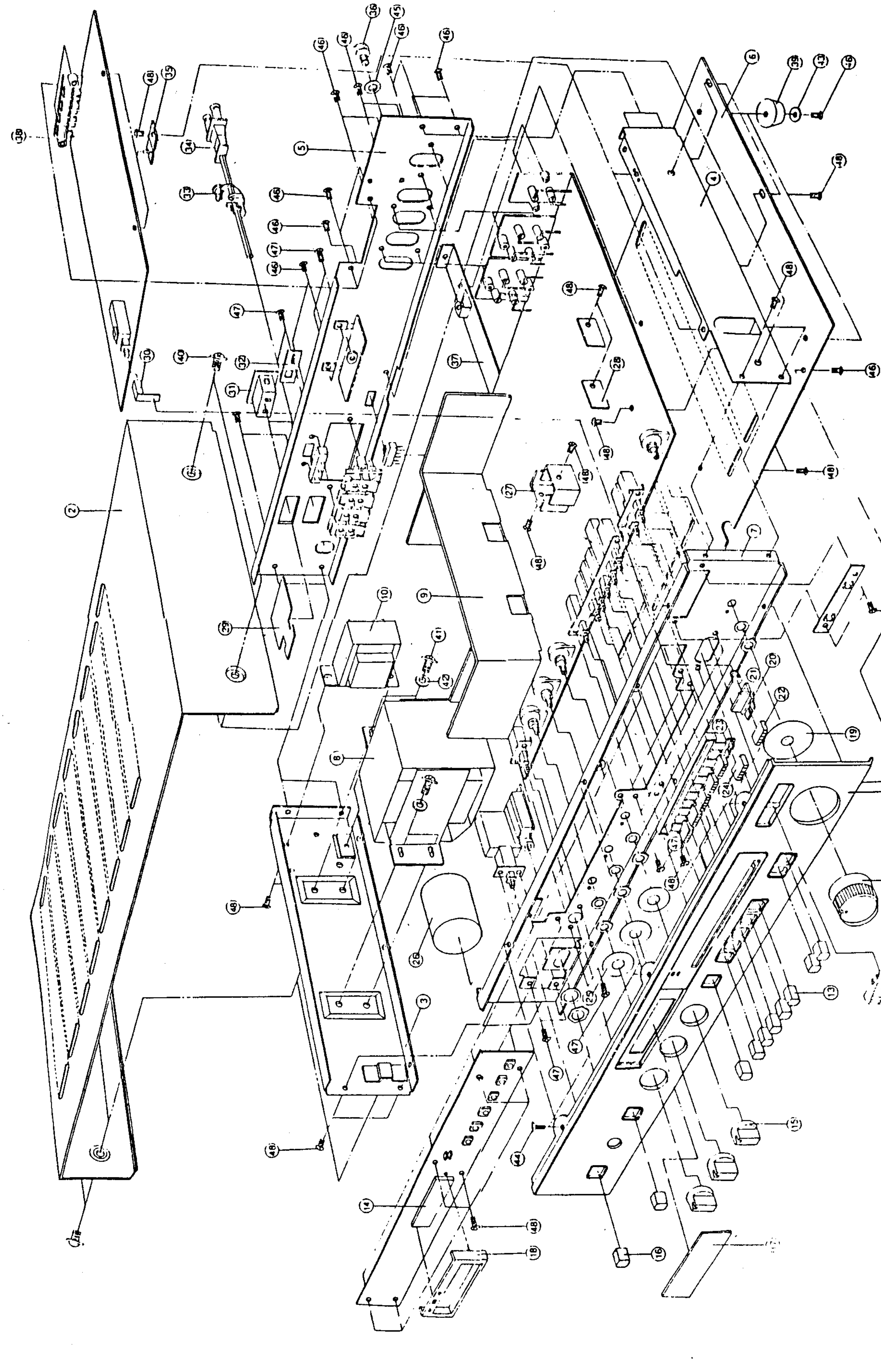
R915	5142827390	RES.CARB	27K	+-5% 1/4W
R916	5142847290	RES.CARB	4.7K	+-5% 1/4W
R917	5142810390	RES.CARB	10K	+-5% 1/4W
R918	5142810190	RES.CARB	100	+-5% 1/4W
R919	5142882290	RES.CARB	8.2K	+-5% 1/4W
R920	5142847290	RES.CARB	4.7K	+-5% 1/4W
R921	5142810390	RES.CARB	10K	+-5% 1/4W
R922 R923	5142810490	RES.CARB	100K	+-5% 1/4W
R924	5142856390	RES.CARB	56K	+-5% 1/4W
R926	5142810490	RES.CARB	100K	+-5% 1/4W
R927 R928	5142815390	RES.CARB	15K	+-5% 1/4W
R929	5142815390	RES.CARB	15K	+-5% 1/4W
S909	5554430400	SW	PUSH	
R459 R460	5145422106	RES.CARB	220	+-5% 1/2W
W401		JACK	PHONE	
R339	5169020291	RES.VR	50KB*2	
C532	5213347091	CAP.EL.	47MFT	16V
C533	5247010101	CAP.CER	100PF	+-5% 50V
C534	5213310112	CAP.EL.	100MFT	16V
C535	5213110112	CAP.EL.	100MFT	6.3V
Q512	6640003000	IC	L78N12	12V
Q513	6621015332	TR.	2SC1815-Y	
Q514	6623000401	TR.	2SA496-Y	
R525	5133256007	RES.	56	+-5% 1W
R526	5142810390	REES. CARB	10K	+-5% 1/4W
R527	5142868190	RES.CARB	680	+-5% 1/4W
R528 R529	5142868290	RES.CARB	6.8K	+-5% 1/4W
C201 C202	5213647991	CAP.EL.	4.7MF	50V
C203 C204	5247010191	CAP.CER	100PF	+-5% 50V
C205 C206	5247056091	CAP.CER	56PF	+-5% 50V
C207 C208	5213447091	CAP.EL.	47MFT	25V
C209 C210	5213122191	CAP.L.	220MFT	6.3V
C211 C212	5222118391	CAP.POLY	18000PF	+-5% 50V
C213 C214	5222182291	CAP.POLY	8200PF	+-5% 50V
C215 C216	5222175291	CAP.POLY	7500PF	+-5% 50V
C217 C218	5247027091	CAP.CER	27PF	+-5% 50V
C219 C220	5213447091	CAP.EL.	47MFT	25V
C221 C222	5213122191	CAP.EL.	220MFT	6.3V
C223 C224	5213310091	CAP.EL.	10MFT	16V
C225 C226	5222122291	CAP.POLY	2200PF	50V
C227 C228	5231810401	CAP.CER	0.1MF	+80-20% 50V
C301 C302	5222110491	CAP.POLY	0.1MF	+-5% 50V
C303 C304	5222110491	CAP.POLY	0.1MF	+-5% 50V
C305 C306	5247122191	CAP.CER	220PF	+-10% 50V
C307 C308	5247010191	CAP.CER	100PF	+-5% 50V
C309 C310	5247015001	CAP.CER	15PF	+-5% 50V
C311 C312	5213247091	CAP.EL.	47MFT	10V
C313 C314	5213447091	CAP.EL.	47MFT	25V
C315 C316	5213210191	CAP.EL.	100MFT	10V
C317 C318	5222118391	CAP.POLY	18000PF	+-5% 50V
C319 C320	5222110491	CAP.POLY	0.10MF	+-5% 50V
C321 C322	5213247091	CAP.EL.	47MFT	10V
C323 C324	5222112401	CAP.POLY	.12MF	+-5% 50V
C325 C326	5215001301	CAP.EL.	0.68MF	+-10% 50V
C327 C328	5231810401	CAP.CER	0.1MF	+80-20% 50V
C329	5231847391	CAP.CER	47000PF	+80-20% 50V
C331 C332	5247147101	CAP.CER	470PF	+-10% 50V
C333 C334	5222110491	CAP.POLY	0.1MF	+-5% 50V
C335	5247122101	CAP.CER	220PF	+-10% 50V
C401 C402	5213601012	CAP.EL.	1MFU	50V

C403 C404	5213601091	CAP.EL	1MF	50V
C405 C406	5222122291	CAP.POLY	2200PF	+-5% 50V
C407 C408	5231382101	CAP.CER	820PF	+-10% 50V
C409 C410	5213247091	CAP.EL.	47MFT	10V
C411 C412	5222110291	CAP.POLY	1000PF	+-5% 50V
C413 C414	5247047091	CAP.CER	47PF	+-5% 50V
C415 C416	5213110212	CAP.EL.	1000MFT	6.3V
C417 C418	5222110491	CAP.POLY	0.1MF	+-5% 50V
C419 C420	5247010191	CAP.CER	100PF	+-5% 50V
C421 C422	5247047091	CAP.CER	47PF	+-5% 50V
C423 C424	5247022091	CAP.CER	22PF	+-5% 50V
C425 C426	5247022091	CAP.CER	22PF	+-5% 50V
C427 C428	5213447091	CAP.EL.	47MFT	25V
C429 C430	5222110491	CAP.POLY	0.1MF	+-5% 50V
C431 C432	5222110491	CAP.POLY	Q.1MF	+-5% 50V
C433 C434	5231810401	CAP.CER	0.1MF	+80-20% 50V
C435 C436	5231810401	CAP.CER	0.1MF	+80-20% 50V
C437 C438	5231510291	CAP.CER	1000PF	+-20% 50V
C439 C440	5231510291	CAP.CER	1000PF	+-20% 50V
C441 C442	5231547291	CAP.CER	4700PF	+-20% 50V
C443	5231847381	CAP.CER	47000PF	+80-20% 50V
C504 C505	5213647012	CAP.EL.	47MFT	50V
C506 C507	5231810401	CAP.CER	0.1MF	+80-20% 50V
C508 C509	5210701601	CAP.EL.	4700MFT	50V
C510 C511	5231810401	CAP.CER	0.1MF	+80-20% 50V
C512	5231810401	CAP.CER	0.1MF	+80-20% 50V
C513	5222210401	CAP.POLY	.1MF	+-10% 50V
C514 C515	5231847391	CAP.CER	47000FF	+80-20% 50V
C516 C517	5213733112	CAP.EL.	330MFT	63V
C518 C519	5213647091	CAP.EL.	47MFT	50V
C520 C521	5247022091	CAP.CER	22PF	+-5% 50V
C522 C523	5213647991	CAP.EL.	4.7MF	50V
C524	5213622991	CAP.EL.	2.2MF	50V
C525	5213647091	CAP.EL.	47MFT	50V
C526	5213547012	CAP.EL.	47MFT	35V
C527 C528	5231810391	CAP.CR	10000PF	+80-20% 50V
C529 C530	5231810391	CAP.CR	10000PF	+80-20% 50V
C531	5213422212	CAP.EL.	2200MFT	25V
C601	5213647991	CAP.EL.	4.7MF	50V
C602 C603	5214122012	CAP.EL.	22MFT	100V
C801 C802	5213222901	CAP.EL.	22MFT	10V
C803 C804	5213222901	CAP.EL.	22MFT	10V
D201 D202	6613003000	DIODE	1N4148	
D203 D204	6613003000	DIODE	1N4148	
D301 D302	6613003030	DIODE	1N4148	
D303 D304	6613003030	DIODE	1N4148	
D401 D402	6613003030	DIODE	1N4148	
D403 D404	6613003030	DIODE	1N4148	
D405 D406	6613003030	DIODE	1N4148	
D501 D502	6611000800	DIODE	1N5401	
D503 D504	6611000800	DIODE	1N5401	
D505 D506	6611000800	DIODE	1N5401	
D507 D508	6611000800	DIODE	1N5401	
D509 D510	6611000800	DIODE	1N5401	
D511	6611012400	DIODE	1B4B41	
D512	6613003030	DIODE	1N4148	
D513	6615016100	DI ZEN		
D514 D515	6611007230	DIODE	1N4002	100V
D516 D517	6611007230	DIODE	1N4002	100V
D601 D602	6613003030	DIODE	1N4148	

NAD- 7220PE 7020e PART LIST

ITEM	PARTS NO.	PARTS NAME	Q'TY
1	5541212400	FRONT, PANEL	1
2	5541002100	TOP, COVER	1
3	5547128700	PLATE, LEFT	1
4	5547128800	PLATE, RIGHT	1
5	5547129000	PLATE, BACK	1
6	5547128200	CHASSIS	1
7	5547128900	PLATE, FRONT	1
8	5561316120	POWER TRANSFORMER	1
9	5545307101	HEAT SINK	1
10	5561316220	POWER TRANSFORMER	1
11	5541534200	ROCKER BUTTON	1
12	5541533900	KNOB, VOLUME	1
13	5541534400	KNOB, PUSH(BLACK)	9
14	5551200600	LED, DISPLAY	1
15	5541534100	KNOB, CONTROL	3
16	5541534410	KNOB, PUSH(GREEN)	1
17	5542908900	LED WINDOW	1
18	5542223200	LED HOLDER	1
19	5542006110	HEMELON(L)	1
20	5542223000	LEVER, CONNECTOR	1
21	5546321200	SPRING, PUSH	1
22	5541534000	KNOB, SEARCH(BLACK)	1
23	5541534500	KNOB, CHASSIS	1
24	5541534010	KNOB, ENTER(BROWN)	1
25	5542006100	HEMELEN(S)	3
26	5547528600	PVC TUBE(BLACK)	1
27	5545306900	HEAT SINK(S)	2
28	5547024210	HEAT SINK(SPCC)	2
29	5545403600	SHIELD COVER	1
30	5542222700	SW, CONNECTOR	1
31	5556308320	AC OUTLET	2
32	5547528400	PLATE,SW.LOCK	1
33	5547501200	BUSHING, POWER CORD	1
34	5556702130	POWER PLUG	1
35	5419700190	HINGE	2
36	5546121400	TERMINAL	1
37	5547128500	BRACKET	1
38	5556204410	ANT.TERMINAL	1
39	5547802100	FOOT	4
40	7190550003	M4X6 MS	4
41	7000311116	M4X6 MS	4
42	7098250002	M4 SPRING WASHER	4
43	7096250006	M4 WASHER	1
44	7034161152	FLT M3X8 TS	3
45	7096160002	M3.5 WASHER	1
46	7033161156	RUD M3X8 TS	22
47	7001171116	PAN M3X8 MS	17
48	7033160652	RUD M3X6 TS	29

EXPLODED VIEW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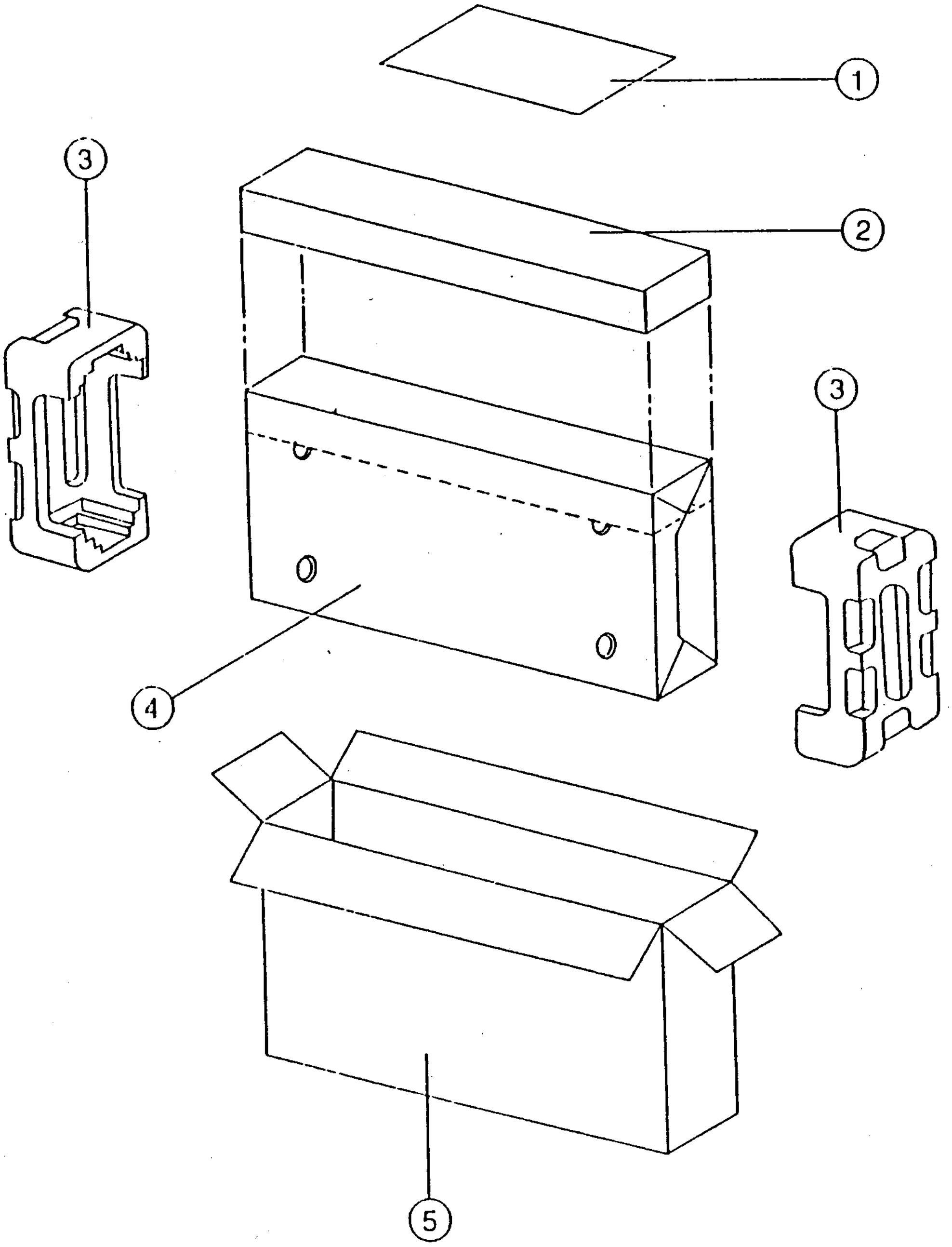
PACKING DIAGRAM



PACKING DIAGRAM FOR NAD-7220PE / 7020e

ITEM	NUMBER	NAME	Q'TY
1	5535121911	OWNS MANUAL	1
2	9530520255	EPE BAG	1
3	9520520155	POLYLON	2
4	9530520155	PE BAG	1
5	9510520455	GIFT BOX	1